

ADDENDUM NO. 1

RAVENSWOOD PCE SITE
RAVENSWOOD, WEST VIRGINIA
2001 INVESTIGATION SUMMARY

PREPARED FOR:

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GAI Consultants, Inc. (GAI) is pleased to submit this investigation summary (Report) for services provided under Work Directive #SUPER135 referred to as Ravenswood PCE Site located in Ravenswood, West Virginia Project #03331. This Report is prepared for the West Virginia Department of Environmental Protection - Office of Environmental Remediation (WVDEP-OER) as outlined in GAI's proposal for requested professional services dated May 23, 2001 and subsequent requested services during the progress of work. Services presented in this Report are a continuation of previous services conducted by GAI during the year 2000. GAI's services performed in 2000 are summarized in the "Interim Investigation Report, Ravenswood PCE Site", dated July 13, 2001.

INTRODUCTION

Tetrachloroethylene (PCE) has been historically detected at various levels within the City of Ravenswood's municipal water supply field. Data on file with the West Virginia Bureau of Public Health indicates that PCE was detected as early as 1989 in the municipal water supply field. In some cases the levels have exceeded the USEPA Maximum Contaminant Level of 5 µg/L. The USEPA and WVDEP have expanded efforts in recent years to more clearly determine the extent of the PCE plume. An air stripper installed in May/June 2000 to date has proven effective at contaminant removal to regulatory limits. Additional details of the project can be found in the May 11, 2001 Work Directive, agency files, and GAI's report titled "Interim Investigation Report, Ravenswood PCE Site, Ravenswood, West Virginia". Historical data on PCE contamination is presented in GAI's Interim Investigation Report.

GAI was contracted by the WVDEP-OER to conduct an additional phase of the groundwater investigation in the City of Ravenswood in an attempt to locate the source or sources of PCE contamination, to better delineate the PCE plume, to identify the capture zone of the existing well field, to estimate water table response to river stage, and to estimate groundwater gradient. The time period covered by this investigation is July 2001 through October 2001.

SUMMARY OF SERVICES

The services associated with this phase of investigation were intended to further approach the following end goals:

1. Determine the source or sources of PCE in the public water supply.
2. Complete plume delineation (horizontal and vertical extent).

3. Install monitoring wells to develop an understanding of groundwater conditions and aquifer response to stress (including well field capture zone, water table response to river stage, and groundwater gradient).

The end goals are being achieved through a phased approach to the project. The following tasks outline the steps taken during this phase of the investigation.

Task 1 - Project Planning

GAI met with OER staff on several different occasions to develop a plan for the second phase of groundwater investigation. The plan was developed based on information obtained after review of agency files and previously conducted groundwater investigations. GAI developed a work plan including scheduling and budgeting for this phase of the investigation. The work plan included investigative services, a Health and Safety Plan (HASP), and a Sampling and Analysis Plan (SAP). These plans were reviewed by OER and accepted for use. Prior to commencing field services, determination of below ground utilities in the vicinity of boring locations and acquisition of right-of-entry agreements for affected properties were completed by GAI.

The investigative services to be performed within the approved work plan included:

- Establish convenient gauging points for the Ohio River and Sandy Creek for determination of surface water elevations (stage monitoring only).
- Locate sampling points and present them on the site map within ± 10 meters of horizontal location based on mapping coordinate system. Locate a limited number of sampling points so groundwater elevations could be determined within ± 0.05 feet of a vertical datum based on the local USGS benchmark elevation.
- Bore up to 25 locations using Direct Push Boring (Geoprobe) for groundwater sampling in the collection of upper and lower portions of the groundwater aquifer.
- Analyze Geoprobe groundwater samples, employing SW846-8260 method, for the limited suite of cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, tetrachloroethene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, and Vinyl Chloride.
- Analyze a limited number (approximately 20 percent of the total number of samples) of Geoprobe groundwater samples, employing SW846-8260 method, for the full suite of volatile organics.

- Collect soil samples from up to three locations at various depths for lithologic characterization.
- Analyze soil samples, employing SW846-8260 method, for the limited suite of cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, tetrachloroethene (PCE), 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, and Vinyl Chloride.
- Install seven monitoring wells.
- Collect one groundwater sample per well from supply wells PW-2, 3, and 5; Monitoring Wells MW-1, 2, 3, and 4; and newly installed wells (MW-5S, 5D, 6, 7, 8, 9, and 10).
- The supply well samples were analyzed, employing SW846-8260 method, for the full suite of volatile organics.

Task 2 - Field Investigations

EnviroProbe, Inc. (EPI) of Spencer, West Virginia was subcontracted to conduct the Geoprobe borings. H.C. Nutting Company of Charleston, West Virginia was subcontracted to complete the monitoring well installations. GAI provided full time monitoring and guidance during field investigations.

Groundwater samples from the upper and lower portions of the groundwater bearing zones were taken from each Geoprobe boring (GP-38 through GP-55). Soil samples were taken from borings GP-38 and GP-49. Samples (groundwater and soil) were analyzed for the limited suite of volatile organic compounds (VOCs) for the following purposes:

- Assist in the completion of plume delineation of PCE (horizontal and vertical extent).
- Assist in assessing the source or sources of PCE.

The reason for selecting only a limited suite of VOCs was due in part to limit the analytical screening to the known degradation products of PCE, and a desire to reduce the overall project costs. PCE is a chlorinated aliphatic hydrocarbon (CAH) and commonly degrades in groundwater under anaerobic conditions by reductive dechlorination. Reductive dechlorination is a process whereby anaerobic microorganisms substitute hydrogen atoms for the chlorine atoms on the CAHs thereby reducing the CAH (in this case PCE) into numerous degradation products that are in some cases less toxic than the parent compound. Therefore, the limited suite VOCs screened for in soil and groundwater samples included PCE and the following degradation products: cis-1,2-

Dichloroethene, trans-1,2-Dichloroethene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, and Vinyl Chloride.

Eighteen borings were advanced utilizing a truck-mounted Geoprobe boring apparatus provided by EPI from July 10, 2001 through August 16, 2001. Groundwater was collected from each boring at two levels (upper and lower portions of the groundwater bearing zones) within the aquifer. The upper portion of groundwater aquifer samples were taken within five feet of encountering water, and the lower portion of the groundwater aquifer samples were taken at the bottom of the boring, generally at the top of the underlying rock formation. To collect groundwater, the drill rods were initially advanced to the approximate water elevation and the screen point opened to allow groundwater to enter the bore of the probe rods. After approximately five minutes a groundwater static level was recorded. Groundwater was then sampled using the ball-check method. After sampling the upper portion of the groundwater aquifer, the drill rods were advanced to bedrock where a lower portion of the groundwater aquifer sample was obtained. These samples were analyzed employing the SW846-8260 method for the limited suite of VOCs. Chemical analysis results for PCE enabled GAI to interpret a horizontal and vertical plume delineation. These analytical results are presented in Tables 1 through 3. Other VOCs analyzed were not detected with the spatial consistency required to establish a meaningful extent of contamination as was done with PCE. Cis -1, 2-Dichloroethene was detected in borings GP-42 (78 feet), GP-49 (81.5 feet), GP-51 (92.2 feet), GP-53 (19.0 feet), GP-53 (65.8 feet) and GP-54 (64.8 feet) ranging from 1.5 to 14.9 µg/L. Other limited suite VOCs were not detected at the practical quantitation limit of 1.0 µg/L. Individual VOC results are presented in Appendix A.

Soil samples were collected from two Geoprobe locations (GP-38 and GP-49). These soil samples were analyzed for volatile organic compounds employing the SW846-8260 method. Chemical analysis for PCE in the soil samples is presented in Table 4 with analytical results included in Appendix B and Boring Logs in Appendix E. No target analytes from the limited suite of VOC's were detected. Individual VOC results are presented in Appendix B.

The approximate location of Geoprobe borings are presented on Drawing 2001-288-E1, Boring, Monitoring Well, and Public Well Location Map.

Task 3 - Monitoring Well Installations

Monitoring wells were installed at various locations for the purposes of:

- Collecting groundwater levels (head).
- Evaluating the capture zone created by the well field.
- Monitoring plume behavior and contamination levels over time.

- Assisting in the prediction of future contaminant concentrations affecting the public water supply.

A total of seven monitoring wells were installed during this investigation. During the course of investigation, OER requested that an additional monitoring well be installed beyond the original scope of services. OER also requested that four Shelby Tube soil samples be collected during monitoring well installation. The Shelby Tube samples were analyzed for total organic carbon (TOC) and natural density as requested by OER.

The seven wells were installed and developed by a West Virginia Certified Well Installer as directed in Title 47 Series 59 and Series 60 of the Code of State Regulations. Well elevations and static water elevations were established for each newly installed well. The location and elevation of the newly installed monitoring wells are presented on Drawing 2001-288-E1, Boring, Monitoring Well and Public Well Location Map. The as-built construction diagrams of the wells are found in Drawings 2001-288-B1 through B7 and the boring logs are found in Appendix E.

Each new well (MW-5S, 5D, 6, 7, 8, 9, and 10), along with public supply wells PW-2, 3, and 5, and monitoring wells MW-1, 2, 3, and 4 were sampled. These samples were analyzed employing the SW846-8260 method for the full suite of VOCs. Analytical results for PCE in the well samples are presented in Table 5 and in Appendix C. Of the original monitoring wells, only MW-4 exhibited PCE contamination (8 ug/L) during this round of sampling which should be noted as the first time PCE has been detected in the well. Given that the highest and most consistent detections of PCE concentrations have been found at PW-3, it is not unusual that MW-4, the closest monitoring well to PW-3, exhibited a low level of PCE contamination.

Other VOCs were not detected with the spatial consistency required to interpret a plume as is the case with PCE. Bromodichloromethane, Chloroform, and Dibromochloromethane were detected in monitoring wells MW-5D, MW-7, and MW-8. Bromodichloromethane ranged from 1.6 to 2.3 µg/L. Chloroform ranged from 1.3 to 1.7 µg/L. Dibromochloromethane ranged from 2.5 to 3.8 µg/L. Bromoform was detected in monitoring wells MW-5D and MW-8 at 1.3 and 1.4 µg/L, respectively. Toluene was detected in monitoring well MW-6 at 1.6 µg/L. Cis-1,2- Dichloroethene was detected in Monitoring well MW-8 at 1.3 µg/L. Other VOCs were not detected at the sample specific practical quantitation limit. Individual VOC results are presented in Appendix C.

Soil samples obtained from Shelby Tubes in monitoring wells MW-5D and MW-8 were analyzed employing the SW846-8260 method for the limited suite of VOCs, total organic carbon, percent moisture, and natural density. Soils samples obtained from auger cuttings from MW-7 and MW-9 were analyzed employing the SW846-8260 method for the limited suite of VOC's, total organic carbon, percent moisture, and natural density. Analysis results are presented in Table 6

with analytical results included in Appendix D and boring logs in Appendix E. Other than a PCE detection of 50 ug/KG detection from the auger cuttings for MW-7, no target analytes from the limited suite of VOCs were detected. Note the original analysis from the MW-7 auger cuttings reported an estimated value of 76 ug/KG with an E qualifier (result above the quantitation range). The 50 ug/KG result was from a re-analysis on a diluted sample, however, the re-analysis date exceeded the 14 day holding time.

EVALUATIONS AND OBSERVATIONS

GAI employed the use of the computer program Groundwater Modeling System (GMS) Version 3.1 to perform evaluation of the analytical results. Information obtained during Task 2 - Field Investigations and Task 3 - Monitoring Well Installations, as well as certain information obtained during GAI's 2000 investigation, was used to establish a preliminary groundwater model for the Ravenswood PCE site. The preliminary model includes estimations of the PCE contaminant plumes for the upper and lower portions of the groundwater bearing zones, and the likely source location.

To provide an estimate for groundwater elevations and flow direction, GAI used static water data from the monitoring wells collected during the current investigation. These head data, along with spatial coordinates, were mapped by hand and evaluated to establish equipotential contours, estimates of flow direction, and the boundary of the pumping well capture zone. Calculated well to well gradients may be found in Table 9.

A preliminary well field capture zone has been interpreted. It appears that the pumping well field capture zone extends to the Ohio River and Sandy Creek. There is no reversal of the ground water gradient evidenced by the monitoring well data. The gradient is to the northeast from the two surface water bodies to the pumping well field. The gradient ranges from 0.001 (MW-9 to MW-4), to 0.002 (MW-7 to MW-4), to 0.003 (MW-5S/D to MW-4). The gradient magnitude increases as one gets closer to MW-4 and the pumping wells, as would be expected where a cone of depression has been created by pumping. These gradients are opposite that of the assumed natural gradient (southwest) toward the Ohio River and Sandy Creek. The interpreted equipotentials and flow direction arrows are shown on Drawing 2001-288-E2, Groundwater Elevation and Flow Direction Map.

To estimate the contamination plumes, PCE analysis data from Geoprobe samples and well samples were input into the GMS program. The model estimated the extent of the PCE contamination plume in the vicinity of the site using a linear interpolation technique. Results of the GMS model showing the estimated PCE contamination plumes for the upper and lower portions of the groundwater aquifer are presented on Drawing 2001-288-E3 and 2001-288-E4.

The likely source of PCE contamination was determined based on the concentrations of PCE observed in localized areas, direction of groundwater flow and the suspected historical land use in the area. The area likely to be the source of PCE contamination is presented on Drawings 2001-288-E3 and E4. However, it should be noted that while these points are likely source areas, the data does not provide for a definitive or final interpretation, which might be used to begin remedial action. It should be also noted that significant increases in PCE were noted in the 2001 monitoring event in Well MW-5S (324 ug/l) and GP-52 (158 ug/l upper portion). Such variances may be a beginning of a trend or an anomaly. The recommendation to continue monitoring would establish the pattern.

Historically, the river stage in the Ravenswood Pool of the Ohio River has been increased and controlled by the US Army Corps of Engineers through the installation of a dam at Racine, Ohio. According to information presented by M. Edward Norman, Consulting Engineer in a September 6, 1988 letter, the Ravenswood pool was raised 8.6 feet from elevation 551.4 feet to 560 feet upon completion of the Racine dam. Based on information in a July 14, 1997 letter from M. Edward Norman, Consulting Engineer, the static groundwater level in the vicinity of the municipal well field has increased by approximately 10 feet since 1964, which was prior to completion of the Ohio River Dam at Racine.

Impeller adjustments to pumps in PW-1 through 5 were completed by others during 1988 to prevent excessive drawdown and to reduce the possibility of the pumps taking air. After adjustments the pumping rates were reported as follows:

- PW-1 = 285 gpm
- PW-2 = 235 gpm
- PW-3 = 290 gpm
- PW-4 = 177 gpm
- PW-5 = 170 gpm

The pumps are not run concurrently. The maximum well field capacity according to city personnel is approximately 1.1 million gallons per day with an average demand of 650,000 to 700,000 gallons per day. Historical information concerning individual pump performance is presented in Table 8.

CONCEPTUAL SITE MODEL

Based on GAI's understanding of current site conditions and evaluations of analytical results, we present the following conceptual site model for the Ravenswood PCE site:

- In the vicinity of the Ravenswood municipal well field the aquifer is unconfined consisting of 65 to 90 feet of alluvial sands with minor clay layers. The transmissivity of the aquifer may range from 6,000 to 35,000 ft²/day per Roy F. Weston, Inc's June 22, 1999 report. The aquifer in situ unit weight may be taken to be 96 lb/ft³ per GAI laboratory evaluations.
- The site is bounded hydraulically on the southeast by Sandy Creek and on the Southwest by the Ohio River.
- The aquifer in Ravenswood is utilized as a source for municipal water with extraction rates of approximately 700,000 gallons per day.
- Likely source areas of PCE contamination are located in the block bounded by Washington Street, Race Street, Mulberry Street, and Walnut Street.
- The plume of PCE contamination extends from the municipal well field on Virginia Street southwest to Broadway Street, approximately 1,400 feet. The plume width is approximately 400 feet in the upper portion of the water bearing zone and 100 feet in the lower portion of the water bearing zone. The plume is evident in the upper and lower portions of the water bearing zones of the aquifer. The upper portion of the water bearing zone presents higher concentrations of PCE contamination than the lower portion of the water bearing zone.
- PCE transport appears to be mainly driven by the municipal well field extraction to the northeast and less by the natural hydraulic gradient toward the southeast and southwest. Evaluation of the hydraulic head data from the monitoring wells indicates that the zone of capture of the pumping wells appears to extend all the way to the Ohio River and Sandy Creek.

RECOMMENDATIONS

GAI recommends the following actions to be undertaken to further the understanding of the Ravenswood PCE site and to begin addressing remediation efforts.

1. Develop detailed mapping of the Ravenswood area in the vicinity of the PCE site including location of previous boring locations so that modeling and prediction of groundwater movement and contamination can provide more characteristic results. Mapping elements to develop include boring locations, streets, surface water channels, buildings in potential source areas, etc.

2. Develop, in detail, a three dimensional capture, flow, and transport groundwater model for the Ravenswood PCE site incorporating information gathered to date so further evaluation as to the well field capture zone, contaminant fate transport, river stage influence, aquifer testing and potential remediation scenarios can be better determined.
3. Implement a periodic groundwater monitoring program to include the City of Ravenwood's well field pumping data to better define the contribution that cyclic extraction of groundwater may have on contaminant transport. Other aspects of the groundwater monitoring program should include at a minimum: sampling for PCE concentrations, measurement of groundwater elevations at established locations, and continued evaluation of the adequacy and effectiveness of the current air-stripping unit.
4. Perform an in-depth ownership review of parcels within the source location areas presented by GAI. This action may positively confirm the likely source and set the stage to identify potentially responsible parties.
5. Identify and evaluate the feasibility of alternative remedial schemes. Potential remedial actions include excavation of vadose zone sources of residual PCE contamination, chemical and biological remedies, hydraulic or barrier containment of "hot spots", relocation of the municipal water supply field, etc.
6. The potential risk to health from indoor air entrapment of the contaminants found at the site, based on known concentrations in ground water and other data , should be evaluated. If it is found that site conditions could lead to exposures in excess of established health limits, further investigation of air quality may be required.
7. Develop a master plan for the Ravenswood PCE site to clearly define the activities to be undertaken. The master plan will provide a systematic framework to assure the necessary protections (monitoring, remediation, etc.) are implemented.

REFERENCES

1. GAI Consultants, Inc. Interim Investigation Report, Ravenswood PCE Site, Ravenswood, West Virginia. July 2001.
2. M. Edward Norman, Consulting Engineer, Well Field Report, July 1997.
3. M. Edward Norman, Consulting Engineer, City Water Wells Letter, September, 1988.
4. Marvin Norman Drilling, Well No.4 Letter, July 1974.
5. Layne Ohio Company, New Well No. 5 Letter, October 1977.
6. GAI Site-Specific Health, Safety and Accident Prevention Plan, May 8, 2000 - Updated July 9, 2001.
7. GAI Consultants, Inc., Sampling Analysis Plan, Ravenswood PCE Site, Ravenswood, West Virginia, July 2001.
8. Roy F. Weston, Inc. Soil Gas Sampling Trip Report, June 1999.

TABLES

Ravenswood PCE Site

Combined Upper and Lower Portions of the Groundwater Bearing Zone PCE Results

Geoprobe ID No.	Sample Date	Sample Depth (ft, bgs)	PCE Concentration (µg/L)
GP-38	07/10/2001	48.0	ND
GP-38	07/10/2001	76.0	ND
GP-39	07/12/2001	41.6	18.2
GP-39	07/12/2001	75.0	ND
GP-40	07/11/2001	45.0	ND
GP-40	07/11/2001	77.3	ND
GP-41	07/12/2001	41.6	12.0
GP-41	07/12/2001	75.5	ND
GP-42	07/11/2001	44.0	ND
GP-42	07/11/2001	78.0	ND
GP-43	07/13/2001	41.9	ND
GP-43	07/13/2001	77.5	ND
GP-44	07/16/2001	42.9	ND
GP-44	07/16/2001	78.6	ND
GP-45	07/13/2001	41.4	ND
GP-45	07/13/2001	75.9	ND
GP-46	07/16/2001	41.9	ND
GP-46	07/16/2001	79.0	ND
GP-47	07/17/2001	42.0	ND
GP-47	07/17/2001	72.5	ND
GP-48	07/18/2001	44.6	ND
GP-48	07/18/2001	80.7	ND
GP-49	08/13/2001	48.0	6.2
GP-49	08/13/2001	81.5	ND
GP-50	08/13/2001	52.0	61.0
GP-50	08/14/2001	81.2	3.5
GP-51	08/15/2001	57.0	3.2
GP-51	08/15/2001	92.2	7.4
GP-52	08/14/2001	56.2	158
GP-52	08/14/2001	92.5	1.1
GP-53	08/15/2001	19.0	ND
GP-53	08/15/2001	65.8	ND
GP-54	08/16/2001	22.6	1.9
GP-54	08/16/2001	64.8	1.4
GP-55	08/16/2001	43.0	19.1
GP-55	08/16/2001	78.1	15.5

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Ravenswood PCE Site

Upper Portion of the Groundwater Bearing Zone PCE Results

Geoprobe ID No.	Sample Date	Sample Depth (ft, bgs)	PCE Concentration (µg/L)
GP-38	07/10/2001	48.0	ND
GP-39	07/12/2001	41.6	18.2
GP-40	07/11/2001	45.0	ND
GP-41	07/12/2001	41.6	12.0
GP-42	07/11/2001	44.0	ND
GP-43	07/13/2001	41.9	ND
GP-44	07/16/2001	42.9	ND
GP-45	07/13/2001	41.4	ND
GP-46	07/16/2001	41.9	ND
GP-47	07/17/2001	42.0	ND
GP-48	07/18/2001	44.6	ND
GP-49	08/13/2001	48.0	6.2
GP-50	08/13/2001	52.0	61.0
GP-51	08/15/2001	57.0	3.2
GP-52	08/14/2001	56.2	158
GP-53	08/15/2001	19.0	ND
GP-54	08/16/2001	22.6	1.9
GP-55	08/16/2001	43.0	19.1

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Ravenswood PCE Site

Lower Portion of the Groundwater Bearing Zone PCE Results

Geoprobe ID No.	Sample Date	Sample Depth (ft, bgs)	PCE Concentration (µg/L)
GP-38	07/10/2001	76.0	ND
GP-39	07/12/2001	75.0	ND
GP-40	07/11/2001	77.3	ND
GP-41	07/12/2001	75.5	ND
GP-42	07/11/2001	78.0	ND
GP-43	07/13/2001	77.5	ND
GP-44	07/16/2001	78.6	ND
GP-45	07/13/2001	75.9	ND
GP-46	07/16/2001	79.0	ND
GP-47	07/17/2001	72.5	ND
GP-48	07/18/2001	80.7	ND
GP-49	08/13/2001	81.5	ND
GP-50	08/14/2001	81.2	3.5
GP-51	08/15/2001	92.2	7.4
GP-52	08/14/2001	92.5	1.1
GP-53	08/15/2001	65.8	ND
GP-54	08/16/2001	64.8	1.4
GP-55	08/16/2001	78.1	15.5

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Table 4
WVDEP-OER
Ravenswood PCE
Soil PCE Results

Updated: May 2002

Sample ID No.	Sample Date	Sample Depth (ft, bgs)	PCE Concentration (ug/kg)
GP-38	07/10/2001	48	ND
GP-49	08/13/2001	48	ND
MW-5D	09/25/2001	50	ND
MW-7	09/19/2001	Auger Cuttings	50
MW-8	09/20/2001	40	ND
MW-9	09/14/2001	Auger Cuttings	ND

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Table 5
WVDEP-OER
Ravenswood PCE Site
Well PCE Results

Well ID No.	Sample Date	PCE Concentration (µg/L)
PW-2	07/23/2001	ND
PW-3	07/23/2001	22.9
PW-5	07/23/2001	ND
MW-1	10/25/2001	ND
MW-2	10/25/2001	ND
MW-3	10/25/2001	ND
MW-4	10/25/2001	8.0
MW-5S	10/08/2001	324
MW-5D	10/08/2001	7.8
MW-6	10/08/2001	21.3
MW-7	10/08/2001	19.5
MW-8	10/08/2001	2.6
MW-9	10/08/2001	ND
MW-10	10/08/2001	1.2

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Table 6
WVDEP-OER
Ravenswood PCE
Soil TOC and Unit Weight Results

Sample ID No.	Sample Date	Sample Depth (ft, bgs)	Total Organic Carbon (mg/Kg)	Percent Moisture (wt%)	Dry Unit Weight (lb/ft ³)	PCE Concentration (ug/kg)
MW-5D	09/25/2001	50	7,110	10.9	89.4	ND
MW-7	09/19/2001	50	9,910	6.2	96.8	50
MW-8	09/20/2001	40	2,990	5.2	97.9	ND
MW-9	09/14/2001	32	4,270	24.9	99.4	ND

ND indicates not detected at the reporting limit
bgs indicates below ground surface

Table 7
WVDEP-OER
Ravenswood PCE Site
Monitoring Well Survey Summary

Monitoring Well ID No.	Northing	Easting	Gauge Date	Casing Elevation (feet) datum	Water Depth (feet)	Water Elevation (feet)
MW-1	1783714.152	711035.2275	10/23/2001	615.98	58.30	557.68
MW-2	1783486.094	711172.2357	10/23/2001	614.79	57.40	557.39
MW-3	1783494.894	711430.3879	10/23/2001	615.80	58.65	557.15
MW-4	1783598.956	711288.3416	10/23/2001	616.95	60.15	556.80
MW-5S	1783533.173	711025.5626	10/23/2001	614.06	56.25	557.81
MW-5D	1783527.012	711037.5768	10/23/2001	613.71	55.90	557.81
MW-6	1783463.083	710857.5681	10/23/2001	612.31	53.90	558.41
MW-7	1783445.059	710692.2678	10/23/2001	611.90	53.30	558.60
MW-8	1783195.395	710468.20	10/23/2001	603.50	44.45	559.05
MW-9	1783211.278	709406.3419	10/23/2001	585.98	26.60	559.38
MW-10	1783195.395	710622.2623	10/23/2001	604.14	45.10	559.04
Sandy Creek	1783690.192	709635.158	10/23/2001	601.27	41.90	559.37

Table 8
City of Ravenswood
Municipal Well Field Performance Summary

Updated: May 2002

Well ID	Date	Static Water		
		Level (feet)	Pumping Rate (gpm)	Drawdown (feet)
PW-1	07/09/1997	57.21	280	11.85
	07/27/1988	61.68	285	12.08
	07/13/1966		186	7.5
PW-2	07/09/1997	56.79	255	8.94
	07/28/1988	60.66	235	9.85
	07/14/1966		217	8
PW-3	07/09/1997	56.88	360	13.35
	07/28/1988	60.71	290	11.41
	07/14/1966		251	11
PW-4	07/09/1997	58.33	210	12.76
	07/28/1988	61.6	177	12.92
	09/29/1964	67.3	198	9
PW-5	07/09/1997	58.32	280	16.72
	07/28/1988	62.27	170	13.07

Ravenswood PCE Site
Apparent Gradient Calculations (Well to Well)

	Difference in	Distance between	
MW-1 to	Head [dH] (feet)	Wells {dz} (feet)	dH/dz (gradient)
MW-2	0.29	266.05	0.001090028
MW-3	0.53	451.91	0.001172791
MW-4	0.88	278.10	0.003164386
MW-5S	0.13	181.24	0.000717293
MW-5D	0.13	187.15	0.000694612
MW-6	0.73	307.57	0.002373453
MW-7	0.92	435.93	0.002110445
MW-8	1.37	768.52	0.001782638
MW-9	1.7	1704.74	0.000997217
MW-10	1.36	663.06	0.002051095
MW-2 to			
MW-3	0.24	258.30	0.000929144
MW-4	0.59	161.92	0.003643752
MW-5S	0.42	154.04	0.002726501
MW-5D	0.42	140.74	0.00298426
MW-6	1.02	315.51	0.003232883
MW-7	1.21	481.72	0.002511839
MW-8	1.66	761.69	0.002179363
MW-9	1.99	1787.15	0.001113505
MW-10	1.65	622.07	0.002652416
MW-3 to			
MW-4	0.35	176.09	0.001987672
MW-5S	0.66	406.63	0.001623093
MW-5D	0.66	394.12	0.001674609
MW-6	1.26	573.70	0.002196261
MW-7	1.45	739.80	0.001959988
MW-8	1.9	1007.72	0.001885439
MW-9	2.23	2043.82	0.001091094
MW-10	1.89	861.84	0.002192985
MW-4 to			
MW-5S	1.01	270.89	0.003728481
MW-5D	1.01	260.88	0.003871496
MW-6	1.61	451.69	0.003564362
MW-7	1.8	615.62	0.002923881
MW-8	2.25	914.05	0.002461563
MW-9	2.58	1921.51	0.001342691
MW-10	2.24	778.80	0.002876235
MW-5S to			
MW-5D	0.0	13.50	0
MW-6	0.6	182.03	0.003296168
MW-7	0.79	344.75	0.002291545
MW-8	1.24	651.73	0.001902639
MW-9	1.57	1650.91	0.000950993
MW-10	1.23	526.07	0.002338111

DRAWINGS

APPENDIX A

Geoprobe Groundwater Analytical Results and Chain of Custody Forms

APPENDIX B

Geoprobe Soil Analytical Results and Chain of Custody Forms

APPENDIX C

Well Groundwater Analytical Results and Chain of Custody Forms

APPENDIX D

Well Soil Analytical Results and Chain of Custody Forms

APPENDIX E
Daily Field Activity Logs and Boring Logs

**FINAL
HAZARD RANKING SYSTEM
DOCUMENTATION RECORD**

for

**RAVENSWOOD PCE GROUND WATER PLUME
RAVENSWOOD, JACKSON COUNTY,
WEST VIRGINIA
(EPA ID No. WVSFN0305428)**

**Prepared for:
U.S. ENVIRONMENTAL PROTECTION AGENCY – REGION III
PHILADELPHIA, PENNSYLVANIA**

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (Western Area)

Contract No.:	68-S3-00-01
TDD No.:	SW3-02-07-0015
Date Prepared:	March 2003
EPA NPL Coordinator:	Linda Baxter
Telephone No.:	(215) 814-5824
Prepared by:	Ecology & Environment, Inc.
START Project Manager:	Gene Nance
Telephone No.:	(304) 769-0207

HRS DOCUMENTATION RECORD--REVIEW COVER SHEET

Name of Site: Ravenswood PCE Ground Water Plume
EPA ID No.: WVSFN0305428

Contact Persons

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Pathways, Components, or Threats Not Scored

The surface water migration, soil exposure, and air migration pathways were not scored in this documentation record because these pathways are not expected to significantly contribute to the overall site score. No air samples have been collected to document a release to ambient air.

HRS DOCUMENTATION RECORD

Name of Site: Ravenswood PCE Ground Water Plume CERCLIS ID No.: WVSFN0305428

EPA Region: 3

Date Prepared: March 2003

Street Address of Site: City of Ravenswood (Ground Water Plume)

County and State: Jackson County, West Virginia

General Location in the State: Western portion of West Virginia, along Ohio River

Topographic Maps: Ravenswood, West Virginia-Ohio, 1994, and Sandyville, West Virginia, 1960 (Photo revised 1988) (References 5 and 6)

Latitude: 38° 57' 6" north

Longitude: 81° 45' 42" west

Geographical coordinates were determined from the location of Municipal Well 3 (References 5, 6, and 33).

Scores

Ground Water Pathway	100
Surface Water Pathway	Not Scored
Soil Exposure Pathway	Not Scored
Air Pathway	Not Scored

HRS SITE SCORE 50.00

WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S²</u>
1. Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	<u>100</u>	<u>10,000</u>
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	<u>NS</u>	
2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	<u>NS</u>	
2c. Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	<u>NS</u>	
3. Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	<u>NS</u>	<u>NS</u>
4. Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	<u>NS</u>	<u>NS</u>
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		<u>10,000</u>
6. HRS Site Score Divide the value on line 5 by 4 and take the square root	<u>50.00</u>	

NS = Not scored
 S = Pathway score
 S² = Pathway score squared

Site Name: Ravenswood PCE Ground Water Plume
Location: Ravenswood, Jackson County, West Virginia

FINAL

GROUND WATER PATHWAY SCORESHEET

	Maximum	Assigned
Likelihood of Release to an Aquifer:		
1. Observed Release	<u>550</u>	<u>550</u>
2. Potential to Release		
2a. Containment	<u>10</u>	<u>10</u>
2b. Net Precipitation	<u>10</u>	
2c. Depth to Aquifer	<u>5</u>	
2d. Travel Time	<u>35</u>	
2e. Potential to Release [lines 2a(2b+2c+2d)]	<u>500</u>	
3. Likelihood of Release (higher of lines 1 and 2e)	<u>550</u>	<u>550</u>
Waste Characteristics:		
4. Toxicity/Mobility	(a)	<u>100</u>
5. Hazardous Waste Quantity	(a)	<u>100</u>
6. Waste Characteristics	<u>100</u>	<u>10</u>
Targets:		
7. Nearest Well	<u>50</u>	<u>50</u>
8. Population:		
8a. Level I Concentrations	(b)	<u>31,642.8</u>
8b. Level II Concentrations	(b)	<u>0</u>
8c. Potential Contamination	(b)	<u>521.4</u>
8d. Population (lines 8a+8b+8c)	(b)	<u>32,164.2</u>
9. Resources	<u>5</u>	<u>0</u>
10. Wellhead Protection Area	<u>20</u>	<u>20</u>
11. Targets (lines 7+8d+9+10)	(b)	<u>32,234.2</u>
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3x6x11)/82,500] c	<u>100</u>	<u>100</u>
Ground Water Migration Pathway Score:		
13. Pathway Score (Sgw), (highest value from line 12 for all aquifers evaluated)c	<u>100</u>	<u>100</u>

a Maximum value applies to waste characteristics category.

b Maximum value not applicable.

c Do not round to nearest integer.

A copy of *Figure 1* is available at the EPA Headquarters Superfund Docket:

Public Reading Room, Room B102
EPA West Building
1301 Constitution Avenue, NW
Washington DC 20460

Telephone: (202) 566-1744
E-Mail: superfund.docket@epa.gov

A copy of *Figure 2* is available at the EPA Headquarters Superfund Docket:

Public Reading Room, Room B102
EPA West Building
1301 Constitution Avenue, NW
Washington DC 20460

Telephone: (202) 566-1744
E-Mail: superfund.docket@epa.gov

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Number</u> | <u>Description of the Reference</u> |
|-----------------------------|--|
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Site Description

The Ravenswood PCE Ground Water Plume Site consists of a ground water plume within the unconfined Quaternary Alluvium aquifer (Reference 8; Reference 9, pages 9-08, 9-09, and 9-11; Reference 21, pages 21-07, 21-09, and 21-12). Analytical results for three of the City's five municipal wells have indicated tetrachloroethene (PCE) contamination ranging up to 91.4 micrograms per liter ($\mu\text{g/L}$) or parts per billion (ppb) (Reference 21, page 21-07 and Table 1 [pages 21-29, 21-30]). Contamination has been detected in Municipal Well Nos. 2, 3, and 5 (Reference 9, pages 9-09 and 9-16; Reference 21, pages 21-09, 21-29, and 21-30). Two of the municipal wells (Wells 2 and 3) are located in the City Maintenance Building. All of the municipal wells are located within an approximately three- to four-acre area to the north of the downtown area. The City Maintenance Building is bounded on the north by an open grassy area, with the adjacent Ravenswood High School located to the north and east, and Plaza Drive located beyond; on the south, by an asphalt parking area with the Jackson County Public Library located beyond; on the east, by the Ravenswood High School baseball field; and on the west, by Virginia Street (Reference 21, pages 21-5 and 21-6); also refer to Figures 1 and 2 of HRS documentation record).

The City Maintenance Building that houses Municipal Wells 2 and 3 was formerly an electrical power plant owned and operated by the City of Ravenswood (Reference 9, page 9-08; Reference 21, page 21-10). Following closure of the power plant, the building was converted into the City Maintenance Garage (Reference 21, page 21-10). PCE may have been used as a cleaning solvent when the electrical power plant was in use (Reference 21, page 21-10). Municipal Wells 1 through 4 were constructed between 1939 and 1964. Municipal Well 5 was constructed in 1977 (Reference 15, pages 15-03 and 15-15; Reference 21, page 21-06).

The blended water supply system for the City of Ravenswood supplies drinking water to a population of 5,453.2 persons in Ravenswood, which includes residential population of approximately 4,005.2 persons and 1,448 students, faculty, and staff from three schools (Reference 23, page 23-01; Reference 25, page 25-01; Reference 26, page 26-01; Reference 34, page 34-03). In addition, the system also supplies water to approximately 2,478.5 persons in the Silverton PSD, which includes the population of two elementary schools (Reference 34, page 34-02; Reference 35, page 35-01; and Reference 36, page 36-01).

Well 3 has consistently shown the highest level of PCE contamination for the municipal wells. In September of 1998, the City of Ravenswood shut down Municipal Well 3 due to PCE contamination (Reference 21, page 21-09). Records indicate that PCE concentrations increased in Well 3 from 6 ppb in October 1989 to 73.3 ppb in August 1998. The highest concentration detected to date in Municipal Well 3 was 91.4 ppb in April 2000 (Reference 21, Table 1 [page 21-29, 21-30]). Municipal Well 2 has had elevated levels of PCE at concentrations exceeding the Maximum Contaminant Level (MCL) on two occasions and Municipal Well 5 has had elevated levels of PCE on 18 occasions between October 1989 and May 2000, with four of the detections at

concentrations exceeding the MCL (Reference 21, Table 1 [pages 21-29, 21-39]). The MCL for PCE is 5 ppb (Reference 2, page 2-11).

On December 27, 1998, the City began pumping Well 3 to the Ravenswood wastewater treatment plant in an effort to protect the remaining wells from contamination (Reference 21, page 5; Reference 9, page 9-08, Reference 24, page 24-02; Reference 29, page 29-01). Well 3 was pumped continuously at a rate of 100 gallons per minute (gpm), which is the maximum rate that the sewer system can process (Reference 9, page 9-08). The City faces a potential for a water shortage as three of its five wells have historically shown PCE contamination (Reference 27, page 1; Reference 9, page 9-08). PCE contamination in Well 5 increased from 10.7 ppb in January 1999 to 21.7 ppb in November 1999. In November 1999, PCE was also detected at a concentration of 5.6 ppb in the finished water (blended water from all the wells) (Reference 21, Table 1 [pages 21-29, 21-30]). After Well 3 began pumping continuously to the wastewater plant in December 1998, contamination in Well 2 and Well 5 diminished. PCE has not been detected in Well 2 since the August 1998 sampling event (Reference 21, Table 1 [pages 21-29, 21-30]; Reference 37, Table 5 [page 37-18]; Reference 38, page 1). PCE concentrations in Well 5 began to decrease from 10.7 ppb detected in January 1999 to less than 1 ppb detected in the six sampling events conducted from February to April 2000 and a detection of 2 ppb in May 2000 (Reference 21, Table 1 [pages 21-29, 21-30]). The West Virginia Department of Environmental Protection (WVDEP) sampled Municipal Wells 2, 3, and 5 in July 2001. Analytical results indicated that PCE was not detected in Wells 2 and 5, and Well 3 had a concentration of 22.9 ppb (Reference 37, Table 5 [page 37-18]). WVDEP sampled the municipal wells again in March/April 2002. Analytical results indicated non-detect in Municipal Wells 2 and 5, and 33 µg/L in Municipal Well 3 (Reference 39, pages 39-133, 39-134, 39-136, 39-137, 39-142, 39-143, 39-19, 39-81; Reference 22, page 22-03). Since May 2000, however, the water from Wells 3 and 5 has been pumped into a chamber using an air stripper to remove PCE and this treated water is blended with water from Wells 1, 2, and 4 (Reference 32, page 32-01; and Reference 38, page 38-01). In May 2000, the City of Ravenswood began analyzing water influent to, and effluent from the air stripper unit. PCE results for influent water in the ten sampling events conducted from May to November 2000 ranged from 19 to 47.6 ppb. Results for the effluent from the air stripper following treatment during the same time frame ranged from 2.3 to 4.2 ppb (Reference 21, Table 1 [pages 21-29, 21-30]). Since the installation of the air stripper unit in June 2000, the finished water blend meets the MCL requirement for PCE concentration (Reference 21, Table 1 [pages 21-29, 21-30]; Reference 27, page 1; Reference 38, page 1).

The following table provides a list of sample numbers used during the EPA and WVDEP sampling events as specified in the respective references:

Sample Numbers Corresponding to Municipal and Monitoring Wells

Well	Reference 9	Reference 21	Reference 37	Reference 39
Municipal Well 1	W-1 (CWS35)	PW-1	NS	PW1 (C4022)
Municipal Well 2	W-2 (CWW25)	PW-2	PW-2	PW2 (C4024)
Municipal Well 3	W-3 (CWS38)	PW-3	PW-3	PW3 (C4026)
Municipal Well 4	W-4 (CWS36)	PW-4	NS	PW4 (C4028)
Municipal Well 5	W-5 (CWS39)	PW-5	PW-5	PW5 (C4030)
Monitoring Well 1	G-1 (CWW24)	MW-1	MW-1	EPA 1 (C4000)
Monitoring Well 2	G-2 (CWW23)	MW-2	MW-2	EPA 2 (C4002)
Monitoring Well 3	G-3 (CWW22)	MW-3	MW-3	EPA 3 (C4004)
Monitoring Well 4	G-4 (CWW21)	NS	MW-4	EPA 4 (C4006)
Monitoring Well 5S	NS	NS	MW-5S	DEP 5S (C4008)
Monitoring Well 5D	NS	NS	MW-5D	DEP 5D (C4010)
Monitoring Well 6	NS	NS	MW-6	DEP 6 (C4012)
Monitoring Well 7	NS	NS	MW-7	DEP 7 (C4014)
Monitoring Well 8	NS	NS	MW-8	DEP 8 (C4016)
Monitoring Well 9	NS	NS	MW-9	DEP 9 (C4018)
Monitoring Well 10	NS	NS	MW-10	DEP 10 (C4020)

Key: NS - Not sampled.
 (#####) - CLP No.

The precise boundaries of the Ravenswood PCE Ground Water Plume site and the extent of contamination have not been fully delineated. However, a ground water investigation conducted by WVDEP from the summer of 2000 through 2001 determined that the ground water plume extends from the area of Municipal Well 3 on Virginia Street in a southward direction for approximately 1,400 feet to Broadway Street (Reference 37, page 37-11). The plume width is estimated to be approximately 400 feet wide in the upper portion of the water bearing zone and 100 feet in the lower portion of the water bearing zone (Reference 37, page 37-11). The size of the plume was estimated based on analytical results from the five municipal wells, four

monitoring wells installed by EPA, seven monitoring wells installed by WVDEP, and ground water samples collected from GeoProbe™ borings during the State investigation (Reference 37, pages 37-08, 37-09). The WVDEP investigation also determined that the ground water flow in the area south and west of the site was generally in a northward direction toward the municipal well field. The aquifer beneath Ravenswood is an unconfined alluvial aquifer located in a floodplain composed of unconsolidated glacial outwash sediments of Pleistocene Age (Reference 9, page 11). The aquifer has a transmissivity estimated to be between 6,000 and 35,000 square feet per day (Reference 10, page 10-02). Groundwater in alluvium along the Ohio River is typically recharged from the infiltration of precipitation, water from the Ohio River, and transfer from adjacent bedrock aquifers (Reference 9, page 9-11). The alluvial aquifer is hydraulically connected to the Ohio River, therefore, the water table elevation fluctuates with the level of the river. Based on topographic relief, river location, and river flow directions, ground water flow direction would be assumed to be to the south and west (Reference 21, page 21-12). The northerly flow direction in the area south and west of the site is likely due to drawdown from the pumping from the municipal wells, creating a cone of depression in the wellfield (Reference 21, page 21-12; Reference 37, pages 37-08 to 37-09).

For HRS purposes, the dimension of the Ravenswood ground water plume is based on available samples collected from the municipal wells and monitoring wells that meet the criteria for an observed release. The area lying between these sampling points is considered part of the plume.

SOURCE DESCRIPTION

2.2 Source Characterization

2.2.1 Source Identification

Number of the source: 1

HRS Source Type: Other

Source 1 has been identified as a ground water plume. The ground water plume can be considered a source in the case of a plume site with no identified sources (Reference 1, Section 1.1, page 51587).

Name and description of the source: Ravenswood Ground Water Plume

Based on the analytical results from the August 1999 SI sampling event, two of the five municipal drinking water wells are contaminated with PCE. Ground water samples collected in the monitoring and municipal wells during the August 1999 SI sampling event contained PCE at greater than three times background concentrations (Reference 9, page 9-09). PCE was detected at a concentration of 30 µg/L in sample W-3 (from Municipal Well 3), and at 14 µg/L in sample W-5 (from Municipal Well 5) (Reference 9, page 9-09). PCE was not detected in the background samples (see Section 3.1.1).

Additionally, analytical results for ground water samples collected from municipal wells and monitoring wells in the WVDEP investigations conducted in 2001 and 2002, indicated PCE and cis-1,2-dichloroethene at elevated concentrations (Reference 37, [Table 5, page 37-18]; Reference 39, pages 39-06 through 39-23). In the 2001 investigation, PCE was detected in the following samples: 22.9 µg/L in PW-3 (from Municipal Well 3); 8.0 µg/L in MW-4 (from Monitoring Well 4); 324 µg/L in MW-5S (from Monitoring Well 5S); 7.8 µg/L in MW-5D (from Monitoring Well 5D); 21.3 in MW-6 (from Monitoring Well 6); 19.5 µg/L in MW-7 (Monitoring Well 7); 2.6 µg/L in MW-8 (Monitoring Well 8); and 1.2 µg/L in MW-10 (from Monitoring Well 10) (Reference 37, Table 5 [page 37-18]). (NOTE: No data validation was completed for this data. Data are provided for informational purposes only and do not affect the site score.). In the WVDEP sampling investigation conducted from March 27 to April 1, 2002, PCE was detected in the following samples: 33 µg/L in PW3 (from Municipal Well 3); 430 µg/L in DEP 5D (from Monitoring Well 5D); 130 µg/L in DEP 7 (from Monitoring Well 7); and 35 µg/L in DEP 8 (from Monitoring Well 8) (Reference 39, pages 39-06 through 39-23).

Location of the source (See Figure 2): Source No. 1

Spatial and analytical relationships between sampling locations indicate the presence of a plume of PCE contamination in the ground water extending from the area of Municipal Well 3 on Virginia Street in a southward direction for approximately 1,400 feet to Broadway Street. The plume width is estimated to be approximately 400 feet wide in the upper portion of the water bearing zone and 100 feet in the lower portion of the water bearing zone (Reference 37, page 37-11). The size of the plume was estimated based on analytical results from the five municipal wells, four monitoring wells installed by EPA, seven monitoring wells installed by WVDEP, and ground water samples collected from GeoProbe™ borings during the State investigation (Reference 37, pages 37-08, 37-09). The WVDEP investigation also determined that the ground water flow in the area to the south and west of the site was generally in a northward direction toward the Municipal Well field. The northerly flow direction is likely a localized condition due to the pumping from the municipal wells (Reference 37, page 37-09).

2.2.2 Hazardous Substances Associated with the Source

Hazardous Substance	Field/Lab Sample ID ¹ (Concentration)	SQL (µg/L)	Ref(s)
Tetrachloroethene (PCE)	W-3/CWS38 (30 µg/L)	1	(9, pages 9-09, 9-16, 9-40, 9-41)
	W-5/CWS39 (14 µg/L)	0.5	

Notes: Sample Nos. W-3/CWS38 and W-5/CWS39 were collected during the Site Inspection sampling event on August 25, 1999 and were analyzed using Contract Laboratory program (CLP) Statement of Work (SOW) OLC02.1 (Reference 9, pages 9-10, 9-31, 9-40).

See Section 3.1.1 for additional sample data indicating the presence of hazardous substances.

Key: µg/L - Micrograms per liter
SQL - Sample quantitation limit. The SQL is the quantity of a substance that can be reasonably quantified given the limits for detection for the method of analysis and sample characteristics that may affect quantitation (Reference 1, page 51586). The SQL is derived from the CLP Contract Required Quantitation Limit (CRQL) by adjusting the CRQL value to account for sample dilutions and for analysis of a sample volume which differs from the volume for aqueous samples specified in the CLP Statement of Work (SOW) OLC03.2 (Reference 4, pages 4-09, 4-13, 4-11, 4-12; Reference 41, page 41-01). The SQLs used in this table are equivalent to the Adjusted CRQLs in the CLP SOW for OLC03.2 (Reference 4, page 4-13). OLC03.2 has replaced OLC02.1 for analysis of low concentration organics in water, however the CRQL for tetrachloroethene did not change. (Reference 40, pages 40-01 to 40-03). Therefore, the calculation for the SQL would be the same for OLC02.1 and OLC03.2 (Reference 4, pages 4-13, 4-09, 4-11; Reference 41, page 41-01).

Hazardous Substances Associated with the Source:

Tetrachloroethene (PCE)

2.2.3 Containment

Based on the analytical results from the August 1999 SI sampling event, two of the five municipal drinking water wells are contaminated with PCE (Reference 9, page 9-09 and Appendix 1 [pages 9-15 to 9-26]). Additional analytical data obtained since the SI have substantiated the SI results and further defined the extent of the plume. The additional data were obtained from the following sampling events: five sampling events conducted by the EPA Removal Branch between January 31, 2000 and May 18, 2000; WVDEP Investigation sampling conducted between July 23, 2001 and October 25, 2001; and WVDEP sampling conducted from March 27, 2002 to April 1, 2002 (Reference 16, Reference 17, Reference 18, Reference 19, Reference 20, Reference 37, and Reference 39). Source 1 is assigned a ground water containment factor value of 10 based on evidence of an observed release to ground water (Reference 1, Table 3-2, page 51596). Targets were subject to Level I concentrations (See Section 3.2.2 of this documentation record).

Containment Value: 10
Reference 1, Table 3-2, page 51596

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

Insufficient information is available to evaluate hazardous constituent quantity.

2.4.2.1.2 Hazardous Waste stream Quantity

Insufficient information is available to evaluate hazardous waste stream quantity.

2.4.2.1.3 Volume

The full extent of the PCE plume has not been determined at this stage in the assessment process due to insufficient data available to allow for an accurate volume calculation, therefore, a value of >0 has been assigned (Reference 1, page 51591).

Dimension of source (yd³): >0 yd³

References(s):1, Section 2.4.2.1.3, Table 2-5

Volume Assigned Value: >0

2.4.2.1.4 Area

The volume/area was not adequately determined, therefore, a value of >0 has been assigned (Reference 1, page 51591).

2.4.2.1.5 Source Hazardous Waste Quantity Value

From above, the highest of the values assigned to Source 1 is >0. Thus, this value has been assigned the source hazardous waste quantity value for Source 1.

Source Hazardous Waste Quantity Value: >0
(Reference 1, Section 2.4.2.1.5)

2.4.2.2 Hazardous Waste Quantity Factor Value

According to the HRS Rule (Reference 1), if the hazardous constituent quantity is not adequately determined for one or more sources, (or one or more portions of sources remaining after a removal action) assign a factor value as follows, "[I]f any target from the migration pathway is subject to Level I or Level II concentrations (see Section 2.5) assign either the value from Table 2-6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway." Based on this, a hazardous waste quantity factor value of 100 has been assigned for Source 1 for the ground water migration pathway.

Hazardous Waste Quantity Factor Value: 100
(Ref. 1, Section 2.4.2.2)

SITE SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Containment			
		Ground- Water	Surface Water	Air Gas	Air Particulate
1	>0	10	NS	NS	NS

Note: NS - Not Scored
Reference 1, Section 2.4.2.1.5

Other Potential Sources

During the development of the HRS documentation record for the Ravenswood PCE Ground Water Plume site, EPA identified the following potential sources:

1. Three former dry cleaning facilities;
2. Former trash/waste dump;
3. Metal scrap heap;
4. Ravenswood Municipal building; and
5. Former Hospital

These potential sources were investigated by EPA and WVDEP in an effort to identify the source of the ground water contamination plume. The investigations did not obtain sufficient data to substantiate that any of these potential sources contributed to the PCE contamination. The following discussion is included to document that the investigation to determine the source of the contamination involved a level of effort equivalent to an expanded SI investigation.

To address contamination issues and identify sources of contamination, the EPA Emergency Response Team (ERT) performed an environmental investigation with sampling events in March and May, 1999 (Reference 21, page 21-13). The ERT tasked the Response Engineering and Analytical Contract (REAC) contractor to develop and implement a soil gas survey to locate potential sources of PCE contamination. The survey encompassed an area of about 25 city blocks (100 acres) and included the wellfield and the area of the three defunct dry cleaners to the south and west of the wellfield (Reference 21, page 21-13; Reference 11, pages 11-01 and 11-02). The survey also encompassed the location of the former trash/waste dump, metal scrap heap, Ravenswood municipal building, and the former hospital (Reference 21, pages 21-10, 21-11, 21-35). REAC conducted the first soil gas survey in March 1999. On March 4, 1999, only three samples contained PCE above the quantitative limit of 10 ppb; the highest concentration recorded was at 30 ppb. On March 5, 1999, REAC collected soil gas samples from 14 locations at six feet below ground surface. PCE was detected above the quantitative limit in one sample at 61 ppb (Reference 11, page 11-02).

In May 1999, the ERT mobilized to the site to continue the survey, which encompassed an area of about 25 city blocks (100 acres) and included the wellfield. PCE was only detected at three locations near Municipal Well 3. The highest concentration observed was 276 ppb. From this investigation, EPA determined that these investigations were inconclusive and that further investigations were needed to identify potential sources of PCE. EPA decided to install monitoring wells in the vicinity of the wellfield to further investigate the source of contamination (Reference 21, page 21-14; Reference 12, pages 12-01, 12-02; Reference 30, page 30-02; and Reference 31, pages 31-01 through 31-04).

Based on area geology, the ground water flow direction is expected to be to the south. However, based on ground water elevation data between the municipal well field and the Ohio River obtained in the State investigation, it was determined that ground water flow direction is actually

to the north in the area to the south and west, towards the municipal well field (Reference 37, page 37-09). This flow direction, which is opposite the previously assumed natural gradient, is most likely due to induced flow from the municipal wells (Reference 21, page 21-21; Reference 37, page 37-09). All of the potential sources identified above, except for the municipal building, are located south, i.e., upgradient, of the municipal well field. The aquifer beneath Ravenswood is unconfined and highly transmissive. Transmissivity has been estimated to be between 6,000 and 35,000 square feet per day (Reference 10, page 10-05, Reference 21, page 21-12). Based on the soil gas survey conducted by REAC, and soil sampling conducted by WVDEP to date, insufficient data are available to positively identify the source of the plume (References 10, page 10-05; Reference 11, page 11-02; Reference 12, page 12-02; Reference 21, Table 2 [page 21-31]); Reference 37, Table 4 [page 37-17]).

3.0 Ground Water Migration Pathway

3.0.1 General considerations

Hydrogeological Setting

Jackson County lies in the Appalachian Plateaus Physiographic Province. The region is characterized by a mature topography where the plateau surface is dissected by a network of streams representing a dendritic drainage pattern. Rocks within the area consist of flat lying shales and claystones (redbeds), channel sandstones, lacustrine limestones and occasional coal beds of the Washington, Waynesburg, and Greene Formations (Reference 8, West Sheet; Reference 9, page 9-11).

The site is located approximately 1,700 feet northeast of the Ohio River on the Ravenswood Bottom and the river flows in a southeasterly direction in this vicinity. The floodplain is composed of unconsolidated glacial outwash sediments of Pleistocene age. Two prominent terraces are visible on the Ravenswood Bottom. The lower terrace lies 30 to 40 feet above normal pool elevation of the Ohio River, the upper terrace lies 60 to 70 feet above normal pool elevations (Reference 8, West Sheet; Reference 9, page 9-11).

Sediments in the floodplain at Ravenswood are composed primarily of sand with some silt and fine gravel mixed in. The sediments commonly fine upward becoming clay-rich near the surface. Depth of the floodplain deposits within the Ravenswood well field is between 90 and 100 feet (Reference 10, pages 10-07 through 10-15; Reference 9, page 9-11). These floodplain deposits make up the Quaternary Alluvium Aquifer. Depth to the water table is approximately 60 feet bgs (Reference 37, Table 8 [page 37-21]; Reference 15, pages 15-8 to 15-11, 15-15). In the vicinity of the Ravenswood municipal well field, the Quaternary Aquifer is unconfined, consisting of alluvial sands with minor, non-contiguous clay layers from the surface down to bedrock at approximately 90 feet bgs. The aquifer is hydraulically connected with the Ohio River to the southwest and Sandy Creek to the southeast (Reference 9, page 9-11; Reference 21, page 21-12; Reference 37, page 37-11). All five municipal and ten of the eleven monitoring wells are drilled to bedrock and are screened in the Quaternary Aquifer. Monitoring Well 5S is screened in the upper portion of the Quaternary Aquifer. Municipal Wells 4 and 5 are screened over 10-foot intervals (the screen intervals in Municipal Wells 1, 2, and 3 are unknown) and the four EPA-installed monitoring wells (Monitoring Wells 1, 2, 3, and 4) are screened over 20-foot intervals upward from their bases (Reference 15, pages 8 to 11, 15; Reference 37, pages 37-24 to 37-30; Reference 10, Appendix A [pages 10-07 to 10-15]). WVDEP installed Monitoring Wells 5D, 5S, 6, 7, 8, 9, and 10. Monitoring wells MW 5D, MW 5S, and MW 6 were each screened over a 10-foot interval. Monitoring wells MW 7, MW 8, MW 9, and MW 10 were each screened over a 20-foot interval (Reference 37, pages 37-24 to 37-30).

The aquifer beneath Ravenswood is an unconfined alluvial aquifer located in a floodplain composed of unconsolidated glacial outwash sediments of Pleistocene Age (Reference 9, page 9-11). The aquifer has a transmissivity estimated to be between 6,000 and 35,000 square feet per

day (Reference 9, page 9-11; Reference 10, page 10-02; Reference 21, page 21-12). Groundwater in alluvium along the Ohio River is typically recharged from the infiltration of precipitation, water from the Ohio River, and transfer from adjacent bedrock aquifers located landward from the river (Reference 9, page 9-11). The alluvial aquifer is hydraulically connected to the Ohio River, therefore, the water table elevation fluctuates with the level of the river (Reference 21, page 21-12). The ground water elevation is approximately 556 to 560 feet above mean sea level (amsl) (Reference 21, page 21-12; Reference 37, pages 37-24 to 37-30). Based on topographic relief, river location, and river flow directions, ground water flow direction would be assumed to be to the south and west (Reference 9, page 9-11; Reference 21, page 21-12). The WVDEP used static water data from the eleven monitoring wells located in the area south and west of the site, measured during the investigation conducted from July 2001 to October 2001, along with spatial coordinates to manually map and estimate equipotential contours, flow direction, and the pumping well capture zone (Reference 37, pages 37-08, 37-09, 37-24 to 37-30, 37-20 [Table 7], and 37-22 to 37-23 [Table 9]). Based on this water elevation data, it was determined that in the area south and west of the site, ground water flow direction is actually to the northeast from the Ohio River and Sandy Creek towards the municipal well field (Reference 37, pages 37-09, 37-11). The northerly flow direction is likely a localized condition caused by a draw down from the pumping from the municipal wells, creating a cone of depression in the wellfield (Reference 21, page 21-12; Reference 37, pages 37-08 to 37-09).

3.1 Likelihood of release

3.1.1 Observed release

Chemical Analysis

An analysis of ground water samples from the Quaternary Alluvium aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (Reference 1, Section 2.3). Municipal Wells 1 (PW1 on Figure 2) and 4 (PW4 on Figure 2) have been designated as the background wells for the observed release. Each of the background wells are drilled to bedrock which is approximately 90 to 95 feet below ground surface (Reference 15, pages 15-08 to 15-11, 15-14, 15-15).

Ground water samples collected in Municipal Wells 3 and 5 (PW3 and PW5, respectively, on Figure 2) during the August 1999 SI sampling event contained PCE at greater than three times background concentrations (Reference 9, page 9-09, Appendix 1 [pages 9-15 to 9-26]). PCE was detected at a concentration of 30 µg/L in grab sample W-3 (from Municipal Well 3), and at 14 µg/L in grab sample W-5 (from Municipal Well 5) (Reference 9, page 9-09, Appendix 1 [pages 9-15 to 9-26], pages 9-40, 9-41; Reference 13, page 13-06). From March 1999 through May 2000, sampling conducted by the City of Ravenswood indicated concentrations ranging from 23.7 to 91.4 ppb for Municipal Well 3 and concentrations ranging from non-detect to 21.7 ppb for Municipal Well 5 (Reference 21, Table 1 [pages 21-29, 21-30]). Ravenswood Municipal well sampling data obtained by subsequent investigations conducted by EPA indicate concentrations of PCE comparable to concentrations found during the August 1999 SI sampling event and with data obtained by the City of Ravenswood. The analytical reports for the EPA sampling, dating from February through June 2000, indicated high concentrations of PCE within Well 3 at the site. These concentrations range from 39.9 to 73.9 ppb (Reference 16, pages 16-03, 16-07; Reference 17, pages 17-03, 17-07; Reference 18, pages 18-03, 18-07; Reference 19, pages 19-05, 19-07; and Reference 20, pages 20-03, 20-07). Results of EPA's sampling of Wells 3 and 5 are summarized in the table below.

Analytical Results for U.S. EPA Sampling – Municipal Wells 3 and 5

Sampling Date	Sample ID/Well No.	PCE Concentration (µg/L)	AQL (µg/L)	Reference(s)
Municipal Well No. 3				
31 January, 2000	00020103/Well 3	39.9 C	5	(Reference 16, pages 16-02, 16-03, 16-05, 16-07, 16-12, 16-13, 16-14)
23 February, 2000	00022408/Well 3	43.8 C	5	(Reference 17, pages 17-02, 17-03, 17-05, 17-07, 17-11, 17-12, 17-15)
21 March, 2000	00032209/Well 3	47.7 C	5	(Reference 18, pages 18-02, 18-03, 18-04, 18-06, 18-07, 18-10, 18-13, 18-14)
18 April, 2000	00041903/Well 3	50.3 C	5	(Reference 19, pages 19-04, 19-05, 19-06, 19-07, 19-11, 19-12, 19-14)
18 May, 2000	00051903/Well 3	73.9 C	5	(Reference 20, pages 20-02, 20-03, 20-04, 20-07, 20-11, 20-12)
Municipal Well No. 5				
31 January, 2000	00020105/Well 5	1.6	1	(Reference 16, pages 16-02, 16-03, 16-07, 16-13, 16-14)
23 February, 2000	00022410/Well 5	ND	1	(Reference 17, pages 17-02, 17-03, 17-05, 17-07, 17-11, 17-15)
21 March, 2000	00032211/Well 5	ND	1	(Reference 18, pages 18-02, 18-03, 18-04, 18-06, 18-10, 18-13)
18 April, 2000	00041905/Well 5	ND	1	(Reference 19, pages 19-04, 19-05, 19-07, 19-11, 19-14)
18 May, 2000	00051905/Well 5	2	1	(Reference 20, pages 20-02, 20-03, 20-07, 20-11, 20-12)

Key: $\mu\text{g/L}$ - micrograms per liter

AQL - Actual Quantitation Limit. The AQL is calculated by multiplying the Nominal Quantitation Limit (NQL) times the NQL factor listed on the sample result page in the data packages, unless superceded by other information provided in the report. The NQLs are listed in the Office of Analytical Services and Quality Assurance Volatile Organic Analysis Nominal Quantitation Limits (NQL) Table which is provided in references 16 through 20. The NQL factors are provided on the sample results pages in references 16 through 20. The NQL factor is an overall correction factor applied to the methods NQL to account for sample dilutions and for analysis of a sample volume which differs from the ideal volume for aqueous samples. The NQL factors for samples from Municipal Well 3 were incorrect on the sample result pages in References 16, 17, 18, 19, and 20, however the correct NQL factor is provided in the Laboratory narratives included in each of the references. See table above sample specific references.

C - The result was obtained from sample dilution resulting in the compound concentration within the quantitation range (References 16, pages 16-05, 16-12; Reference 17, pages 17-04, 17-12; Reference 18, pages 18-04, 18-14; Reference 19, pages 19-06, 19-12; Reference 20, pages 20-04, 20-12)

Information contained within the August 1999 SI indicated that PCE was also detected at 8.3 parts per billion (ppb) in Municipal Well 2 (PW2 on Figure 2) during a 1998 sampling event (Reference 9, pages 9-08, 9-14, Reference 21, Table 1 [pages 21-29, 21-30]). However, data obtained during the SI sampling event in August 1999 indicated a non-detect for PCE in Municipal Well 2 (Reference 9, Appendix 1, [pages 9-15 to 9-26], page 9-46).

Additionally, analytical results for ground water samples collected from municipal wells and monitoring wells in the WVDEP investigation conducted in 2001 and 2002, indicated PCE at elevated concentrations (Reference 37, Table 5 [page 37-18]; Reference 39, pages 39-06 through 39-23). In the 2001 sampling investigation, PCE was also detected in the municipal wells and monitoring wells at elevated concentrations as follows: 22.9 $\mu\text{g/L}$ in PW-3 (from Municipal Well 3); 8.0 $\mu\text{g/L}$ in MW-4 (from Monitoring Well 4); 324 $\mu\text{g/L}$ in MW-5S (from Monitoring Well 5S); 7.8 $\mu\text{g/L}$ in MW-5D (from Monitoring Well 5D); 21.3 in MW-6 (from Monitoring Well 6); 19.5 $\mu\text{g/L}$ in MW-7 (Monitoring Well 7); 2.6 $\mu\text{g/L}$ in MW-8 (Monitoring Well 8); and 1.2 $\mu\text{g/L}$ in MW-10 (from Monitoring Well 10) (Reference 37, Table 5 [page 37-18]). See table below for complete analytical data for monitoring and municipal wells sampled during the event. (NOTE: No data validation was completed for this data and laboratory documentation was not available for data presented in Reference 37 to allow for validation to be conducted. Data are provided for informational purposes only and do not affect the site score.).

Analytical Results for WVDEP Sampling Conducted in 2001 – Municipal and Monitoring Wells (*NOTE: No data validation was completed for this data. The data are presented for informational purposes only and do not affect the site score.*)

Sampling Date	Sample ID/Well No.	PCE Concentration (µg/L)	EQL (µg/L)	Reference(s)
23 July, 2001	PW-2/ Municipal Well 2	ND	1	(Ref. 37, Table 5 [page 37-18])
23 July, 2001	PW-3/ Municipal Well 3	22.9	1	(Ref. 37, Table 5 [page 37-18])
23 July, 2001	PW-5/ Municipal Well 5	ND	1	(Ref. 37, Table 5 [page 37-18])
25 October, 2001	MW-1/Monitoring Well 1	ND	1	(Ref. 37, Table 5 [page 37-18])
25 October, 2001	MW-2/ Monitoring Well 2	ND	1	(Ref. 37, Table 5 [page 37-18])
25 October, 2001	MW-3/Monitoring Well 3	ND	1	(Ref. 37, Table 5 [page 37-18])
25 October, 2001	MW-4/Monitoring Well 4	8	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-5S/Monitoring Well 5S	324	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-5D/Monitoring Well 5D	7.8	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-6/Monitoring Well 6	21.3	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-7/Monitoring Well 7	19.5	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-8/Monitoring Well 8	2.6	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-9/Monitoring Well 9	ND	1	(Ref. 37, Table 5 [page 37-18])
8 October, 2001	MW-10/Monitoring Well 10	1.2	1	(Ref. 37, Table 5 [page 37-18])

Key: $\mu\text{g/L}$ - micrograms per liter

EQL - Estimated Quantitation Limit (Reference 42, page 42-02; Reference 43, page 43-01; Reference 37, pages 37-31 to 37-62).

In the WVDEP sampling investigation conducted from March 27 to April 1, 2002, PCE was detected in the following samples at concentrations exceeding three times background concentration: 33 $\mu\text{g/L}$ in PW3 (from Municipal Well 3); 430 $\mu\text{g/L}$ in DEP 5D (from Monitoring Well 5D); 130 $\mu\text{g/L}$ in DEP 7 (from Monitoring Well 7); and 35 $\mu\text{g/L}$ in DEP 8 (from Monitoring Well 8) (Reference 39, pages 39-06 through 39-23). These analytical results were obtained through the Contract Laboratory Program (CLP) and the data have been validated. See table below for complete analytical data for monitoring and municipal wells sampled during the event.

Analytical Results for WVDEP Sampling Conducted in 2002 – Municipal and Monitoring Wells (NOTE: Sample analysis was completed at a CLP Laboratory. Data were validated by ESAT.)

Sampling Date	Sample ID/Well No.	PCE Concentration ($\mu\text{g/L}$)	SQL ($\mu\text{g/L}$)	Reference(s)
29 March, 2002	EPA 1/C4000/ Monitoring Well 1	ND	10	Ref. 39, pages 39-11, 39-98
29 March, 2002	EPA 2/C4002/ Monitoring Well 2	ND	10	Ref. 39, pages 39-11; 39-101
1 April, 2002	EPA 3/C4004/ Monitoring Well 3	ND	10	Ref. 39, pages 39-11; 39-104
29 March, 2002	EPA 4/C4006/ Monitoring Well 4	ND	10	Ref. 39, pages 39-11; 39-107
27 March, 2002	DEP 5S/C4008/ Monitoring Well 5S	ND	10	Ref. 39, pages 39-11; 39-110
27 March, 2002	DEP 5D/C4010/ Monitoring Well 5D	430	50	Ref. 39, pages 39-15; 39-116
28 March, 2002	DEP 6/C4012/ Monitoring Well 6	ND	10	Ref. 39, pages 39-15; 39-119
1 April, 2002	DEP 7/C4014/ Monitoring Well 7	130	10	Ref. 39, pages 39-15; 39-122
1 April, 2002	DEP 8/C4016/ Monitoring Well 8	35	10	Ref. 39, pages 39-15; 39-125
1 April, 2002	DEP 9/C4018/ Monitoring Well 9	ND	10	Ref. 39, pages 39-15; 39-128

Sampling Date	Sample ID/Well No.	PCE Concentration (µg/L)	SQL (µg/L)	Reference(s)
1 April, 2002	DEP 10/C4020/ Monitoring Well 10	ND	10	Ref. 39, pages 39-27; 39-261
28 March, 2002	PW1/C4022/ Municipal Well 1	ND	10	Ref. 39, pages 39-19; 39-131
28 March, 2002	PW1A/C4032/ Municipal Well 1 (duplicate sample)	ND	10	Ref. 39, pages 39-23; 39-146
27 March, 2002	PW2/C4024/ Municipal Well 2	ND	10	Ref. 39, pages 39-19; 39-134
27 March, 2002	PW3/C4026/ Municipal Well 3	33	10	Ref. 39, pages 39-19; 39-137
27 March, 2002	PW4/C4028/ Municipal Well 4	ND	10	Ref. 39, pages 39-19; 39-140
27 March, 2002	PW5/C4030/ Municipal Well 5	ND	10	Ref. 39, pages 39-19; 39-143

Key: µg/L - micrograms per liter
SQL - Sample Quantitation Limit. The SQL is the quantity of a substance that can be reasonably quantified given the limits for detection for the method of analysis and sample characteristics that may affect quantitation (Reference 1, page 51586). The SQL is derived from the CLP Contract Required Quantitation Limit (CRQL) by adjusting the CRQL value to account for sample dilutions and for analysis of a sample volume which differs from the volume for aqueous samples specified in the CLP SOW OLM04.2 (Reference 44, pages 44-05, 44-10, 44-07, 44-08; Reference 41, page 41-01). The SQLs used in this table are equivalent to the Adjusted CRQLs in the CLP SOW for OLM04.2 (Reference 44, page 44-10; Reference 41, page 41-01).

Background Samples:

Municipal Well Nos. 1 and 4 are considered to be representative of background conditions. The wells are completed to approximately the same depth as the wells from which the release samples were collected, and they are screened at approximately the same depth intervals (Reference 15, pages 15-8 to 15-11, 15-15). Background and release samples were collected from municipal wells during the SI directly from the pump after purging for 15 minutes. Monitoring wells were sampled using a submersible pump and dedicated Teflon tubing after purging three well volumes (Reference 13, page 13-05). The samples were analyzed using CLP Statement of work (SOW) OLC02.1, Low Concentration Organics (Reference 9, page 9-31). During the WVDEP sampling event conducted in March-April, 2002, monitoring well samples were collected using Low Flow (Minimal Drawdown) Ground-Water Sampling Procedures (EPA/540/S-95/504) and municipal well samples were collected from the pump directly into the sample containers (Reference 7, pages 7-10, 7-11, 7-12; Reference 22, pages 22-01 to 22-26). The samples were analyzed using CLP SOW OLM04.2 Volatile Organics, which has higher CRQLs than OLC02.1 (Reference 39, page 39-03, 39-11 to 39-30; pages 22-01 to 22-26). All samples were unfiltered (Reference 7, pages 7-11, 7-12; Reference 13, page 13-05, 13-06).

Based on topographic relief, river location, and river flow directions, ground water flow direction would be assumed to be towards the Ohio River to the south and west (Reference 9, page 9-11; Reference 21, page 21-12). The WVDEP used static water data measured in the eleven monitoring wells during the investigation conducted from July 2001 to October 2001, along with spatial coordinates to manually map and estimate equipotential contours, flow direction, and the pumping well capture zone (Reference 37, pages 37-08, 37-09, 37-24 to 37-30, Table 7 [page 37-20], and Table 9 [pages 37-22, 37-23]). Based on this water elevation data, it was determined that the ground water flow direction is actually to the northeast from the Ohio River and Sandy Creek towards the municipal well field rather than toward the river (Reference 37, page 37-09, 37-11). The northerly and easterly flow direction is likely a localized condition caused by a drawdown from the pumping from the municipal wells, creating a cone of depression in the wellfield (Reference 21, page 21-12; Reference 37, pages 37-08 to 37-09). Though the presumed ground water flow direction to the northeast is toward the background wells, the release sample wells are located between the observed plume and the background wells. It is apparent that Municipal Well 3 is intercepting the PCE plume and preventing the background wells from being impacted, as evidenced by no detections of PCE in the background wells. Therefore Municipal Well Nos. 1 and 4 are considered to be representative of background ground water conditions.

Background Samples:

Sample ID (Field/Lab)	Sample Location	Screened Interval (Ft msl)	Sampling Date	Reference(s)
Background Samples for SI Sampling Conducted in August 1999				
W-1/CWS35	Municipal Well 1	Unknown, (well depth 522.84' msl)	August 24, 1999	Ref. 9, p. 9-10; Ref. 15, p.15-08
W-4/CWS36	Municipal Well 4	533.84 to 523.84	August 24, 1999	Ref. 9, p. 9-10; Ref. 15, p. 15-11
W-6/CWS37	Municipal Well 4 Duplicate of W-4	533.84 to 523.84	August 24, 1999	Ref. 9, p. 9-10; Ref. 15, p. 15-11
Background Samples for WVDEP Sampling Conducted in March-April 2002				
PW 1/C4022	Municipal Well 1	Unknown, (well depth 522.84' msl)	March 28, 2002	Ref. 9, p. 9-10; Ref. 15, p.15-08; Ref. 39, p. 39-19
PW 1A /C4032	Municipal Well 1 Duplicate of PW 1	Unknown, (well depth 522.84' msl)	March 28, 2002	Ref. 9, p. 9-10; Ref. 15, p.15-08; Ref. 39, p. 39-23
PW 4/C4028	Municipal Well 4	533.84 to 523.84	March 27, 2002	Ref. 9, p. 9-10; Ref. 15, p. 15-11; Ref. 39, p. 39-19

Release Samples: (See Figure 2, Sample Location Map)

Sample ID (Field/Lab)	Sample Location	Screened Interval (Ft msl)	Sampling Date	Reference(s)
Release Samples for SI Sampling Conducted in August 1999				
W-3/CWS38	Municipal Well 3 Inside City Maintenance Garage	Unknown, (well depth 523.94' msl)	August 25, 1999	Ref. 9, p. 9-05, 9- 10; Ref. 15, p. 15- 10
W-5/CWS39	Municipal Well 5	533.22 to 523.22	August 25, 1999	Ref. 9, p. 9-05, 9- 10; Ref. 15, p. 15- 15
Release Samples for WVDEP Sampling Conducted in March-April 2002				
PW3/C4026	Municipal Well 3	Unknown, (well depth 523.94' msl)	March 27, 2002	(Ref. 15, p. 15-10; Ref. 39, page 39- 19)
DEP 5S/ C4008	Monitoring Well 5S	551.39 to 541.39	March 27, 2002	(Ref. 37, p. 37-25; Ref. 39, page 39- 11)
DEP 7/ C4014	Monitoring Well 7	544.14 to 524.14	April 1, 2002	(Ref. 37, page 37- 27; Ref. 39, page 39-15)
DEP 8/ C4016	Monitoring Well 8	544.83 to 524.83	April 1, 2002	(Ref. 37, p. 37-28; Ref. 39, page 39- 15)

A comparison of the background and release sample concentrations are summarized below.

Background Samples:

Sample ID (Field/Lab)	Hazardous Substance	Concentration (µg/L)	SQL (µg/L)	Reference(s)
Background Samples for SI Sampling Conducted in August 1999				
W-1/CWS35	PCE	ND	0.5	Ref. 9, p. 9-37, 9-99 to 9-102, 9-31 to 9-35
W-4/CWS36	PCE	ND	0.5	Ref. 9, p. 9-38, 9-99 to 9-102, 9-31 to 9-35
W-6/CWS37	PCE	ND	0.5	Ref. 9, p. 9-39, 9-99 to 9-102, 9-31 to 9-35
Background Samples for WVDEP Sampling Conducted in March-April 2002				
PW 1/C4022	PCE	ND	10	Ref. 39, p. 39-19, 39-03 to 39-07, 39-130, 39-131, 39-78 to 39-81; Ref. 22, p. 22-05
PW 4/C4028	PCE	ND	10	Ref. 39, p. 39-19, 39-03 to 39-07, 39-139, 39-140, 39-78 to 39-81; Ref. 22, p. 22-03
PW 1A/ C4032	PCE	ND	10	Ref. 39, p. 39-23, 39-03 to 39-07, 39-145, 39-146; 39-78 to 39-81; Ref. 22, p. 22-05

Key: µg/L = micrograms per liter.

ND = Non-detect.

SQL = Sample Quantitation Limit. The SQL is the quantity of a substance that can be reasonably quantified given the limits for detection for the method of analysis and sample characteristics that may affect quantitation (Reference 1, page 51586). The SQL is derived from the CLP Contract Required Quantitation Limit (CRQL) by adjusting the value to account for sample dilutions and for analysis of a sample volume which differs

from the volume for aqueous samples specified in the applicable CLP Statement of Work (SOW). The SQLs used in this table are equivalent to the Adjusted CRQLs in the CLP SOWs for OLC03.2 and OLM04.2 (Reference 4, pages 4-09, 4-13, 4-11, 4-12; Reference 44, pages 44-05, 44-10, 44-07, 44-08; Reference 41, page 41-01). OLC03.2 has replaced OLC02.1 for analysis of low concentration organics in water, however the CRQL for tetrachlorethene did not change (Reference 40, pages 40-01 to 40-03). Therefore, the calculation for the SQL would be the same for OLC02.1 and OLC03.2 (Reference 4, pages 4-13, 4-09, 4-11; Reference 41, page 41-01). The SQL calculation for OLM04.2 is provided in References 41 and 44 (Reference 41, page 41-01; Reference 44, pages 44-05, 44-10, 44-07, 44-08;). Samples analyzed using OLC02.1: W-1/CWS35; W-4/CWS36; W-6/CWS37. Samples analyzed using OLM04.2: PW 1/C4022; PW 4/C4028; PW 1A/C4032.

Release Samples:

Sample ID (Field/Lab)	Hazardous Substance	Concentration (µg/L)	SQL (µg/L)	Reference(s)
Release Samples for SI Sampling Conducted in August 1999				
W-3/CWS38	PCE	30	1	Ref. 9, p. 9-40, 9-99 to 9-102, 9-31 to 9-35
W-5/CWS39	PCE	14	0.5	Ref. 9, page 9-41, 9-99 to 9-102, 9-31 to 9-35
Release Samples for WVDEP Sampling Conducted in March-April 2002				
DEP 7/ C4014	PCE	130	10	Ref. 39, p. 39-15, 39-122, 39-01 to 39-07, 39-78 to 39-82; Ref. 22, p. 22-07
DEP 8/C4016	PCE	35	10	Ref. 39, p. 39-15, 39-125, 39-01 to 39-07, 39-78 to 39-82; Ref. 22, p. 22-06

Key: µg/L - micrograms per liter

ND - Non-detect

SQL - Sample Quantitation Limit. The SQL is the quantity of a substance that can be reasonably quantified given the limits for detection for the method of analysis and sample characteristics that may affect quantitation (Reference 1, page 51586). The SQL is derived from the CLP Contract Required Quantitation Limit (CRQL) by adjusting the value to account for sample dilutions and for analysis of a sample volume which differs from the volume for aqueous samples specified in the CLP Statement of Work (SOW). The SQLs used in this table are equivalent to the Adjusted CRQLs in the CLP SOWs for OLC03.2 and OLM04.2 (Reference 4, pages 4-09, 4-13, 4-11, 4-12; Reference 44, pages 44-05, 44-10, 44-07, 44-08; Reference 41, page 41-01). OLC03.2 has replaced OLC02.1 for analysis of low concentration organics in water, however the CRQL for tetrachlorethene did not change (Reference 40, pages 40-01 to 40-03). Therefore, the calculation for the SQL would be the same for OLC02.1 and OLC03.2 (Reference 4, pages 4-13, 4-09, 4-11; Reference 41, page 41-01). The SQL calculation for OLM04.2 is provided in References 41 and 44 (Reference 41, page 41-01; Reference 44, pages 44-05, 44-10, 44-07, 44-08;). Samples analyzed using OLC02.1: W-3/CWS38; and W-5/CWS39. Samples analyzed using OLM04.2: DEP 7/C4014; and DEP 8/C4016.

Hazardous Substances Released:

Tetrachloroethene (or PCE)

Attribution

No attribution discussion is included because when the source itself consists of a ground water plume with no identified source, no separate attribution is required (Reference 1, page 51595).

Observed Release Factor Value: 550

3.1.2 Potential to release

Potential to release was not scored because an observed release to ground water was established by chemical analysis (see Section 3.0 of this documentation record).

3.1.3 Calculation of likelihood of release factor category value

As documented in Section 3.1.1. of this documentation record, an observed release was established to the Quaternary Alluvium aquifer. An observed release factor value of 550 was assigned as the likelihood of release factor category value for the Quaternary Alluvium aquifer.

Likelihood of Release Factor Value: 550
Reference 1, Section 3.1.3, page 51601

3.2 Waste characteristics

3.2.1 Toxicity/mobility

The Ravenswood PCE site was assigned a toxicity/mobility factor value of 100 based on the values assigned to the hazardous substance (PCE) for the toxicity/mobility factors. The hazardous substance with the highest toxicity/mobility factor value for the Quaternary Aquifer is PCE (Reference 1, Section 3.2.1.3, page 51602).

3.2.1.1 Toxicity

A toxicity factor value of 100 was assigned to PCE as specified in Section 2.4.1.1 of the HRS (Reference 1, Section 3.2.1.1, page 51601).

Toxicity Factor Value: 100
Reference 1, Section 3.2.1.1, page 51601; Reference 2, page BI-11

3.2.1.2 Mobility

A mobility factor of 1 was assigned to the hazardous substance PCE because it meets the criteria for an observed release by chemical analysis (Reference 1, Section 3.2.1.2, page 51601).

Ground Water Mobility Factor: 1
Reference 1, Section 3.2.1.2, page 51601

3.2.1.3 Calculation of toxicity/mobility factor value

Hazardous Substance	Source No.	Toxicity Factor Value	Mobility	Toxicity/Mobility Factor Value	References
PCE	1	100	1	100	Reference 2, p. BI-11

Toxicity/Mobility Factor Value: 100

3.2.2 Hazardous waste quantity

As the PCE concentrations in the release samples exceed the 5 ppb MCL for drinking water, the drinking water targets for the ground water migration pathway are subject to Level I concentrations (Reference 2, page BII-11). Therefore, an HWQ factor value of 100 is assigned (Ref. 1, Section 2.4.2.2).

Source Number	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is source hazardous constituent quantity data complete? (Yes/No)
1	>0	No
Sum of Values: >0		

3.2.3 Calculation of waste characteristics factor category value

The toxicity/mobility and hazardous waste quantity factor values were multiplied, resulting in a waste quantity factor value of 1×10^4 . Based on this product and Table 2-7, Section 2.4.3.1 of the HRS Rule (Reference 1), a value of 10 was assigned to the waste characteristics factor category.

Toxicity/Mobility Factor Value X Hazardous
Waste Quantity Factor Value: 1×10^4

Hazardous Waste Quantity Factor Value: 1×10^4
Waste Characteristics Factor Category Value: 10

3.3 Targets

Since the Ravenswood PCE Ground Water Plume site consists solely of a contaminated ground water plume with no identified source, the 4-mile target distance limit was measured at the center of the area of observed ground water contamination. The area of observed ground water contamination was determined based on available samples that meet the criteria for an observed release (Reference 1, Section 3.0.1.1, page 51595). The area of observed ground water contamination is the area between Municipal Wells 3 and 5 in which samples collected during the August 1999 SI met the observed release criteria (Reference 9, pages 9-09, Table 1 [pages 9-16 to 9-19], 9-40, and 9-41). These wells are used as a source of drinking water for the City of Ravenswood and some surrounding areas. See Section 3.3.2 for documentation of the population which uses the well water as a source of drinking water.

The area of observed ground water contamination was further defined during the WVDEP investigation conducted March 27 to April 1, 2002. Analytical results for ground water samples collected indicated an observed release in Municipal Well 3 and also in monitoring wells MW 5D, MW 7, and MW 8 (Reference 39, pages 39-06 to 39-23). The vertical and horizontal extent of the ground water contamination has not been adequately characterized; however, the PCE ground water plume appears to extend from the area of Municipal Well 3 on Virginia Street in a southward direction for approximately 1,400 feet to Broadway Street. The plume width is estimated to be approximately 400 feet wide in the upper portion of the water bearing zone and 100 feet in the lower portion of the water bearing zone (Reference 37, page 37-11). The size of the plume was estimated based on analytical results from the five municipal wells, four monitoring wells installed by EPA, 7 monitoring wells installed by WVDEP, and ground water samples collected from GeoProbe™ borings during the State investigation. The WVDEP investigation also determined that the ground water flow was generally in a northward direction toward the municipal well field. The northerly flow direction is likely a localized condition due to the pumping from the municipal wells (Reference 37, pages 37-09, 37-11).

3.3.1 Nearest Well

Samples from the August 1999 SI from Municipal Wells 3 and 5 meet the criteria for an observed release for these wells, and are subject to Level I concentrations as specified in Section 2.5.1 of the HRS. The concentrations of PCE associated with Municipal Wells 3 and 5 are above the health-based benchmarks from Table 3-10 from Reference 1 (Reference 1; Reference 2, page BII-11). That is, they are above the 5 ppb maximum contaminant level (MCL) benchmark for drinking water. Thus, the nearest well factor was assigned a value of 50 based on drinking water wells subject to Level I concentrations (Reference 1, Section 3.3.1, Table 3-10 and 3-11, page 51603).

Nearest Well Factor: 50

Reference 1, Section 3.3.1, Table 3-10 and 3-11, page 51603

3.3.2 Population

The plume of ground water contamination includes the area between Municipal Wells 3 and 5 in which samples taken during the August 1999 SI met the observed release criteria (Reference 9, page 9-09, Table 1 [pages 9-16 to 9-19], 9-40, and 9-41). Both municipal and private wells within four miles of the site are used as potable water supplies. All five of the Ravenswood municipal wells are within 0.25 mile of the center of this area of observed ground water contamination (Reference 9, page 9-27).

The blended water supply system for the City of Ravenswood supplies drinking water to a population of approximately 5,453.2 persons. This population was based on the number of residential customers and the population of three schools: Henry J. Kaiser Elementary, Ravenswood High School, and Ravenswood Middle School. The Ravenswood water system provides drinking water to 1,749 residential customers and three schools which have a total of 1,448 students, faculty, and staff (Reference 23, page 23-01; Reference 25, page 25-01; Reference 26, page 26-01). The 1,749 residential households are estimated to have the average number for the City of Ravenswood of 2.29 persons per residence: $1,749 \times 2.29 = 4,005.2$ persons (Reference 34, page 34-03). Therefore, the City of Ravenswood water system serves a total of $1,448 + 4,005.2 = 5,453.2$ persons in the City of Ravenswood. In addition, the system also supplies water to approximately 2,478.5 persons in the Silverton PSD, which includes two elementary schools (Reference 34, page 34-02; Reference 35, page 35-01; and Reference 36, page 36-01). The Silverton population number is based on the number of billing customers and the population of two elementary schools serviced by the PSD. Silverton PSD services 739 residential customers, which includes the two elementary schools: Gilmore Elementary and Eastwood Elementary (Reference 35, page 35-01). The two elementary schools have a total of 631 students, faculty and staff (Reference 36, page 36-01). The remaining 739 billing customers are estimated to have the county average of 2.5 persons per residence: $739 \times 2.5 = 1,847.5$ persons (Reference 34, page 34-02). Therefore, the Silverton PSD serves a total of $631 + 1,847.5 = 2,478.5$ persons. The total population served by the City of Ravenswood water system is $5,453.2 + 2,478.5 = 7,931.7$.

In determining the population served by each well within the blended system, the total population of 7,931.7 persons regularly served by the blended system was apportioned equally to each well (Reference 28, page 28-01; Reference 34, pages 34-02 and 34-03; Reference 35, page 35-01; Reference 36, page 36-01; and Reference 1, Section 3.3.2, page 51603). This is based on each well's relative contribution to the total blended system. In estimating the well's relative contribution, it was documented that no well exceeds 40 percent based on average annual pumpage or capacity (Reference 28, page 28-01). Each of the five wells that have contributed to the blended system have been apportioned a population of 1,582.14 (Reference 1, Section 3.3.2, page 51603).

In addition, there is a total population of 1,412 people relying on private wells within the four-mile radius of the site (Reference 14, page 14-08). However, this population is not considered within the target factor value due to lack of information regarding sampling and location of the wells.

HRS scoring will not consider the effects of responses that do not reduce waste quantities such as providing alternate drinking water supplies to populations with drinking water supplies

contaminated by the site. In such cases, the initial targets factor is used to reflect the adverse impacts caused by contamination of drinking water supplies; otherwise, a contaminated aquifer could be artificially shielded from further remediation (Reference 1, pages 51567 and 51568).

3.3.2.1 Level of contamination

3.3.2.2 Level I concentrations

PCE was detected at a concentration of 30 µg/L in release sample W-3, and at 14 µg/L in release sample W-5 (Reference 9, page 9-09). The number of people served by drinking water from points of withdrawal subject to Level I concentrations (Municipal Wells 3 and 5) is 3,164.28 (1,582.14 x 2). The sum of 3,164.28 is multiplied by 10 based on Level I concentrations and is the assigned value for this factor (Reference 1, Section 3.3.2.2, page 51603).

Level I Concentrations: 31,642.8
Reference 1, Section 3.3.2.2, page 51603

3.2.3 Level II concentrations

No Level II concentrations are evaluated in this documentation record.

3.3.2.4 Potential contamination

Municipal Wells 1, 2, and 4 of the Ravenswood municipal wells are within 0.25 mile of the center of the area of observed ground water contamination (Reference 9, page 9-27). Each well supply has been apportioned a population of 1,582.14. A total number of people served in the 0-1/4 mile distance ring that have not been counted under Level I or Level II concentration is 4,746.42. Using Table 3-12 of the HRS, page 51604, a distance-weighted population value of 5,214 was assigned to the 0-1/4 mile distance ring (HRS, Section 3.3.2.4, pages 51603 and 51604). No other data regarding the depth and location for the private wells within the 4-mile target distance limit were available, and these were not considered in the potential contamination factor.

The distance-weighted population was multiplied by one tenth to produce a value of 521.4 for the 0-1/4 distance category was assigned based on the number of people included within the distance category that could be potentially be drinking contaminated water (Reference 1, Section 3.3.2.5, Table 3-12, page 51604).

Potential Contamination Value: 521.4
Reference 1, Section 3.3.2.4, page 51604

3.3.2.5 Calculation of population factor value

The sum of the factor values for Level I concentrations (31,642.8), Level II concentrations (0), and potential contamination (521.4) is 32,164.2. The sum of 32,164.2 is assigned as the population factor value for the aquifer (Reference 1, Section 3.3.2.5, page 51604).

Population Factor Value: 32,164.2
Reference 1, Section 3.3.2.5, page 51604

3.3.3 Resources

No uses other than drinking water and industrial process water were identified (Reference 1, Section 3.3.3.5).

Resources Factor Value: 0

3.3.4 Wellhead Protection Area

A wellhead protection area exists in the City of Ravenswood (Reference 3). All the municipal wells and the currently known extent of the Ravenswood PCE Ground Water Plume Site are located within the wellhead protection area (Reference 1, Section 3.3.4; Reference 3, pages 3-01, 3-02; Figure 2).

Wellhead Protection Area Factor Value: 20

3.3.5 Calculation of targets factor category value

The sum for the factor values for nearest well, population, resources, and wellhead protection area is 32,234.2. This sum is the targets factor category value for the Quaternary Aquifer.

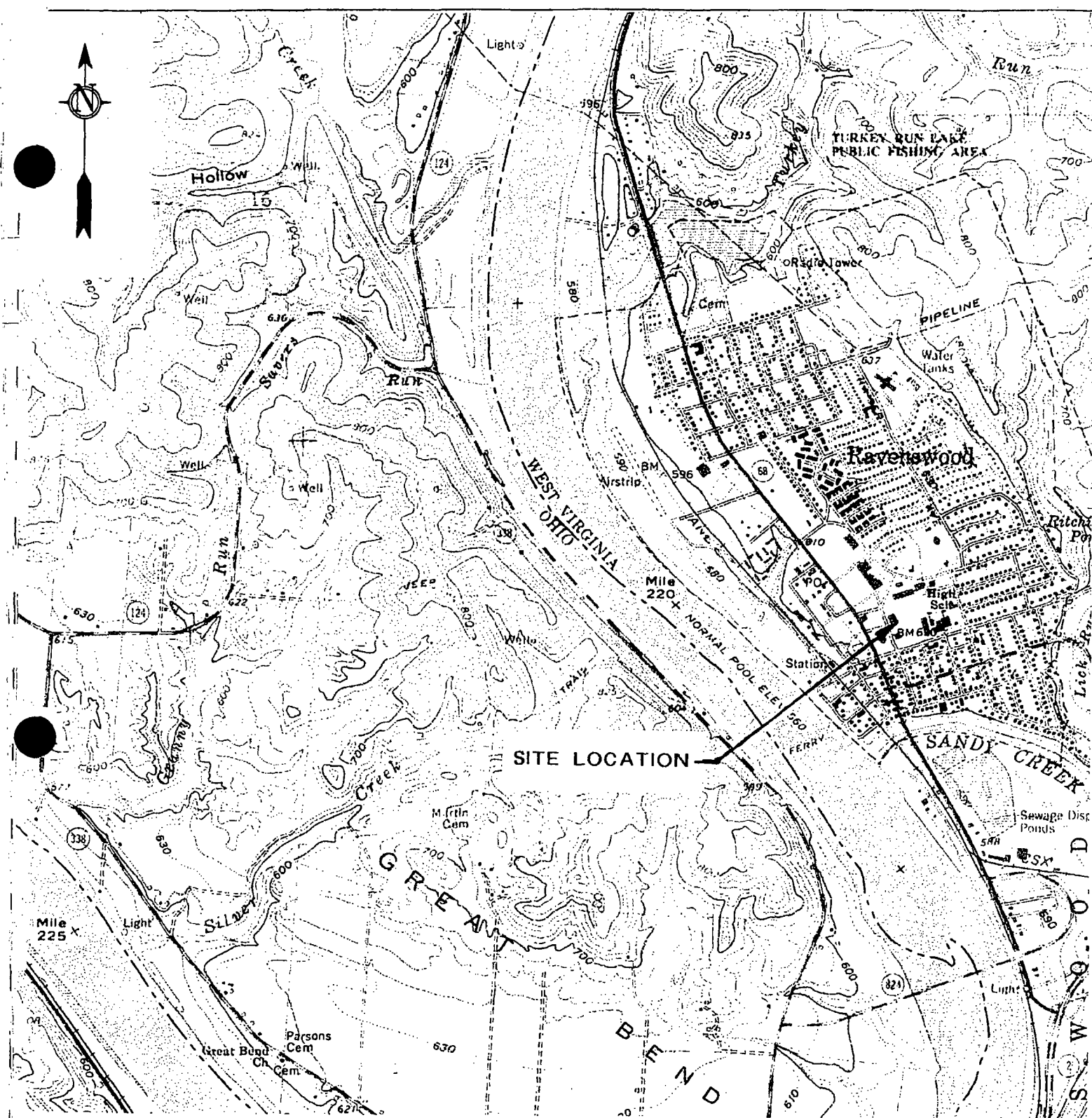
Targets Factor Category Value: 32,234.2
Reference 1, Section 3.3.5, page 51604

3.4 Ground water migration score for an aquifer

The factor category values for likelihood of release (550), waste characteristics (10), and targets (32,234.2) have been multiplied, and rounded to the nearest integer of 177,288,100. This number is divided by 82,500 for a ground water migration score of 2148.9. This is subject to a maximum value of 100 for the Quaternary Alluvium aquifer.

Ground Water Pathway Score for the Quaternary Alluvium Aquifer: 100
Reference 1, Section 3.4, page 51604

DRAWINGS



MAPPING REFERENCE:
 RAVENSWOOD, WEST VIRGINIA
 U.S.G.S. 7.5 MINUTE QUADRANGLE
 1960 (PHOTOREVISED 1987)

**SITE LOCATION MAP
 RAVENSWOOD PCE SITE
 RAVENSWOOD, WEST VIRGINIA**

**WEST VIRGINIA DIVISION OF
 ENVIRONMENTAL PROTECTION
 OFFICE OF ENVIRONMENTAL REMEDIATION
 CHARLESTON, WEST VIRGINIA**

DWN. ETC. CHKD. DES.

APPD. DES. DATE 12/22/00

SCALE: 1" = 2000'

DRAWING NUMBER

2000-185-A1



AR300870



Engineers Geologists Planners
 Environmental Specialists
 3412 Chesterfield Avenue
 Charleston, West Virginia 25304
 304-926-8100

APPENDIX A

Geoprobe Groundwater Analytical Results and Chain of Custody Forms

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-01A

Client Sample ID: GP-38(48FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/10/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	103	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		07/13/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT:	GAI CONSULTANTS (CHARLESTON)	Client Sample ID: GP-38(76FT)
Lab Order:	0107317	Site ID: RAVENSWOOD WV
Project:	2001-288-10	Collection Date: 7/10/01
Lab ID:	0107317-02A	Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	102	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	140	%REC	NA	86-115	S	07/13/01	TC
Surr: Dibromofluoromethane	95	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107345
Project: 2001-288-10
Lab ID: 0107345-01A

Client Sample ID: GP-39 (41.6 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/12/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	18.2	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	96	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	93	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107345
Project: 2001-288-10
Lab ID: 0107345-02A

Client Sample ID: GP-39 (75.0 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/12/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	93	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	103	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-05A

Client Sample ID: GP-40(45FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/11/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	103	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/13/01	TC
Surr: Dibromofluoromethane	96	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-06A

Client Sample ID: GP-40(77.3FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/11/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	92	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		07/13/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107345
 Project: 2001-288-10
 Lab ID: 0107345-04A

Client Sample ID: GP-41 (41.6 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/12/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	12.0	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	92	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107345
 Project: 2001-288-10
 Lab ID: 0107345-05A

Client Sample ID: GP-41 (75.5 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/12/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	99	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	93	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-03A

Client Sample ID: GP-42(44FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/11/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		07/13/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-04A

Client Sample ID: GP-42(78FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/11/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	8.3	µg/L	NA	1.0		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/13/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/13/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	114	%REC	NA	86-115		07/13/01	TC
Surr: Dibromofluoromethane	94	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107421
Project: 2001-288-10
Lab ID: 0107421-01A

Client Sample ID: GP-43 (41.9FT)
Site ID: RAVENSWOOD WV
Collection Date: 07/13/2001
Matrix: LI

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Tetrachloroethene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Vinyl chloride	ND	µg/L	NA	1.0		07/18/01	KK
Surr: 1,2-Dichloroethane-d4	99	%REC	NA	80-120		07/18/01	KK
Surr: 4-Bromofluorobenzene	106	%REC	NA	86-115		07/18/01	KK
Surr: Dibromofluoromethane	98	%REC	NA	80-120		07/18/01	KK
Surr: Toluene-d8	102	%REC	NA	88-110		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107421
Project: 2001-288-10
Lab ID: 0107421-03A

Client Sample ID: GP-43 (77.5FT)
Site ID: RAVENSWOOD WV
Collection Date: 07/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Tetrachloroethene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Trichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Vinyl chloride	ND	µg/L	NA	1.0		07/18/01	KK
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	80-120		07/18/01	KK
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/18/01	KK
Surr: Dibromofluoromethane	103	%REC	NA	80-120		07/18/01	KK
Surr: Toluene-d8	104	%REC	NA	88-110		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-01A

Client Sample ID: GP-44 (42.9 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	109	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	89	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-03A

Client Sample ID: GP-44 (78.6 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	99	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	89	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107421
 Project: 2001-288-10
 Lab ID: 0107421-05A

Client Sample ID: GP-45 (41.4FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 07/13/2001
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Tetrachloroethene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Trichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Vinyl chloride	ND	µg/L	NA	1.0		07/18/01	KK
Surr: 1,2-Dichloroethane-d4	108	%REC	NA	80-120		07/18/01	KK
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/18/01	KK
Surr: Dibromofluoromethane	99	%REC	NA	80-120		07/18/01	KK
Surr: Toluene-d8	102	%REC	NA	88-110		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-06A

Client Sample ID: GP-46 (41.9 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	96	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	109	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	85	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107500
 Project: 2001-288-10
 Lab ID: 0107500-08A

Client Sample ID: GP-46 (79.0 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/16/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	108	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	105	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	101	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-14A

Client Sample ID: GP-47 (42.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/17/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	108	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	118	%REC	NA	86-115	S	07/20/01	TC
Surr: Dibromofluoromethane	97	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-15A

Client Sample ID: GP-47 (72.5FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/17/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	112	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	96	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 27-Jul-01

CLIENT:	GAI CONSULTANTS (CHARLESTON)	Client Sample ID:	GP-48 (44.6)
Lab Order:	0107539	Site ID:	RAVENSWOOD, WV
Project:	2001-288-10	Collection Date:	7/18/01
Lab ID:	0107539-01A	Matrix:	LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/27/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/27/01	TC
Surr: 1,2-Dichloroethane-d4	88	%REC	NA	80-120		07/27/01	TC
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		07/27/01	TC
Surr: Toluene-d8	111	%REC	NA	88-110	S	07/27/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 27-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107539
Project: 2001-288-10
Lab ID: 0107539-02A

Client Sample ID: GP-48 (80.7)
Site ID: RAVENSWOOD, WV
Collection Date: 7/18/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/27/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/27/01	TC
Surr: 1,2-Dichloroethane-d4	87	%REC	NA	80-120		07/27/01	TC
Surr: 4-Bromofluorobenzene	101	%REC	NA	86-115		07/27/01	TC
Surr: Toluene-d8	110	%REC	NA	88-110	S	07/27/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: GP-49 (48FT)

Lab Order: 0108458

Site ID: RAVENSWOOD, WV

Project: 2001-288-10

Collection Date: 08/13/2001

Lab ID: 0108458-01A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
Tetrachloroethene	6.2	µg/L	NA	1.0		08/16/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/16/01	TC
Surr: 1,2-Dichloroethane-d4	104	%REC	NA	80-120		08/16/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		08/16/01	TC
Surr: Dibromofluoromethane	105	%REC	NA	80-120		08/16/01	TC
Surr: Toluene-d8	92	%REC	NA	88-110		08/16/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108458
Project: 2001-288-10
Lab ID: 0108458-03A

Client Sample ID: GP-49 (81.5FT)
Site ID: RAVENSWOOD, WV
Collection Date: 08/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	2.4	µg/L	NA	1.0		08/17/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/17/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/17/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	80-120		08/17/01	TC
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		08/17/01	TC
Surr: Dibromofluoromethane	108	%REC	NA	80-120		08/17/01	TC
Surr: Toluene-d8	95	%REC	NA	88-110		08/17/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108458
Project: 2001-288-10
Lab ID: 0108458-04A

Client Sample ID: GP-50 (52.0FT)
Site ID: RAVENSWOOD, WV
Collection Date: 08/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	5.0		08/17/01	WM
trans-1,2-Dichloroethene	ND	µg/L	NA	5.0		08/17/01	WM
Tetrachloroethene	61.0	µg/L	NA	5.0		08/17/01	WM
1,1,1-Trichloroethane	ND	µg/L	NA	5.0		08/17/01	WM
1,1,2-Trichloroethane	ND	µg/L	NA	5.0		08/17/01	WM
Trichloroethene	ND	µg/L	NA	5.0		08/17/01	WM
Vinyl chloride	ND	µg/L	NA	5.0		08/17/01	WM
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	80-120		08/17/01	WM
Surr: 4-Bromofluorobenzene	103	%REC	NA	86-115		08/17/01	WM
Surr: Dibromofluoromethane	105	%REC	NA	80-120		08/17/01	WM
Surr: Toluene-d8	95	%REC	NA	88-110		08/17/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108458
Project: 2001-288-10
Lab ID: 0108458-05A

Client Sample ID: GP-50 (81.2)
Site ID: RAVENSWOOD, WV
Collection Date: 08/14/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Tetrachloroethene	3.5	µg/L	NA	1.0		08/17/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/17/01	TC
Surr: 1,2-Dichloroethane-d4	90	%REC	NA	80-120		08/17/01	TC
Surr: 4-Bromofluorobenzene	111	%REC	NA	86-115		08/17/01	TC
Surr: Toluene-d8	103	%REC	NA	88-110		08/17/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-01A

Client Sample ID: GP-51 (57.OFT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Tetrachloroethene	3.2	µg/L	NA	1.0		08/21/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/21/01	TC
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		08/21/01	TC
Surr: 4-Bromofluorobenzene	95	%REC	NA	86-115		08/21/01	TC
Surr: Dibromofluoromethane	102	%REC	NA	80-120		08/21/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		08/21/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: GP-51 (92.2FT)

Lab Order: 0108530

Site ID: RAVENSWOOD WV

Project: 2001-288-10

Collection Date: 8/15/01

Lab ID: 0108530-03A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	14.9	µg/L	NA	1.0		08/21/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Tetrachloroethene	7.4	µg/L	NA	1.0		08/21/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/21/01	TC
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		08/21/01	TC
Surr: 4-Bromofluorobenzene	96	%REC	NA	86-115		08/21/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		08/21/01	TC
Surr: Toluene-d8	103	%REC	NA	88-110		08/21/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: GP-52 (56.2FT)

Lab Order: 0108458

Site ID: RAVENSWOOD, WV

Project: 2001-288-10

Collection Date: 08/14/2001

Lab ID: 0108458-06A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Tetrachloroethene	158	µg/L	NA	10.0		08/17/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/17/01	TC
Surr: 1,2-Dichloroethane-d4	91	%REC	NA	80-120		08/17/01	TC
Surr: 4-Bromofluorobenzene	103	%REC	NA	86-115		08/17/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		08/17/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT:	GAI CONSULTANTS (CHARLESTON)	Client Sample ID:	GP-52 (92.5FT)
Lab Order:	0108458	Site ID:	RAVENSWOOD, WV
Project:	2001-288-10	Collection Date:	08/14/2001
Lab ID:	0108458-07A	Matrix:	LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Tetrachloroethene	1.1	µg/L	NA	1.0		08/17/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/17/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/17/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/17/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		08/17/01	TC
Surr: 4-Bromofluorobenzene	116	%REC	NA	86-115	S	08/17/01	TC
Surr: Toluene-d8	98	%REC	NA	88-110		08/17/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: GP-53 (19.0FT)

Lab Order: 0108530

Site ID: RAVENSWOOD WV

Project: 2001-288-10

Collection Date: 8/15/01

Lab ID: 0108530-05A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	5.0	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	77	%REC	NA	80-120	S	08/22/01	TC
Surr: 4-Bromofluorobenzene	95	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	97	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-07A

Client Sample ID: GP-53 (65.8FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	2.3	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	78	%REC	NA	80-120	S	08/22/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	97	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	95	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-08A

Client Sample ID: GP-54 (22.6FT)
Site ID: RAVENSWOOD, WV
Collection Date: 8/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	1.9	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	96	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	105	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0108530
 Project: 2001-288-10
 Lab ID: 0108530-09A

Client Sample ID: GP-54 (64.8FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 8/16/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	1.5	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	1.4	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	99	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	97	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	100	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	104	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-11A

Client Sample ID: GP-55 (43.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	19.1	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	90	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	95	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	100	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-13A

Client Sample ID: GP-55 (78.1FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	15.5	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	90	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	105	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107345
Project: 2001-288-10
Lab ID: 0107345-03A

Client Sample ID: GP-39B (75.0 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/12/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	101	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	103	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107345
Project: 2001-288-10
Lab ID: 0107345-06A

Client Sample ID: GP-41B (75.5 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/12/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	103	%REC	NA	80-120		07/14/01	TC
Surr: Dibromofluoromethane	93	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	97	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-09A

Client Sample ID: GP-42B(78FT)DUP
Site ID: RAVENSWOOD WV
Collection Date: 7/11/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	9.2	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	102	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	96	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	94	%REC	NA	80-120		07/14/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107421
 Project: 2001-288-10
 Lab ID: 0107421-02A

Client Sample ID: GP-43B (41.9FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 07/13/2001
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/18/01	KK
Bromobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Bromochloromethane	ND	µg/L	NA	1.0		07/18/01	KK
Bromodichloromethane	ND	µg/L	NA	1.0		07/18/01	KK
Bromoform	ND	µg/L	NA	1.0		07/18/01	KK
Bromomethane	ND	µg/L	NA	1.0		07/18/01	KK
n-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
sec-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
tert-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Carbon tetrachloride	ND	µg/L	NA	1.0		07/18/01	KK
Chlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Chloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Chloroform	ND	µg/L	NA	1.0		07/18/01	KK
Chloromethane	ND	µg/L	NA	1.0		07/18/01	KK
2-Chlorotoluene	ND	µg/L	NA	1.0		07/18/01	KK
4-Chlorotoluene	ND	µg/L	NA	1.0		07/18/01	KK
Dibromochloromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/18/01	KK
Dibromomethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
Ethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/18/01	KK
Isopropylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/18/01	KK
Methylene chloride	ND	µg/L	NA	1.0		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107421
Project: 2001-288-10
Lab ID: 0107421-02A

Client Sample ID: GP-43B (41.9FT)
Site ID: RAVENSWOOD WV
Collection Date: 07/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/18/01	KK
n-Propylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Styrene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Tetrachloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Toluene	ND	µg/L	NA	1.0		07/18/01	KK
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Trichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Vinyl chloride	ND	µg/L	NA	1.0		07/18/01	KK
o-Xylene	ND	µg/L	NA	1.0		07/18/01	KK
m,p-Xylene	ND	µg/L	NA	2.0		07/18/01	KK
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		07/18/01	KK
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/18/01	KK
Surr: Dibromofluoromethane	96	%REC	NA	80-120		07/18/01	KK
Surr: Toluene-d8	106	%REC	NA	88-110		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107421
Project: 2001-288-10
Lab ID: 0107421-04A

Client Sample ID: GP-43C (77.5FT)
Site ID: RAVENSWOOD WV
Collection Date: 07/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/18/01	KK
Bromobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Bromochloromethane	ND	µg/L	NA	1.0		07/18/01	KK
Bromodichloromethane	ND	µg/L	NA	1.0		07/18/01	KK
Bromoform	ND	µg/L	NA	1.0		07/18/01	KK
Bromomethane	ND	µg/L	NA	1.0		07/18/01	KK
n-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
sec-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
tert-Butylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Carbon tetrachloride	ND	µg/L	NA	1.0		07/18/01	KK
Chlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Chloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Chloroform	3.3	µg/L	NA	1.0		07/18/01	KK
Chloromethane	ND	µg/L	NA	1.0		07/18/01	KK
2-Chlorotoluene	ND	µg/L	NA	1.0		07/18/01	KK
4-Chlorotoluene	ND	µg/L	NA	1.0		07/18/01	KK
Dibromochloromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/18/01	KK
Dibromomethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/18/01	KK
Ethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/18/01	KK
Isopropylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/18/01	KK
Methylene chloride	ND	µg/L	NA	1.0		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107421
Project: 2001-288-10
Lab ID: 0107421-04A

Client Sample ID: GP-43C (77.5FT)
Site ID: RAVENSWOOD WV
Collection Date: 07/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/18/01	KK
n-Propylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Styrene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Tetrachloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Toluene	ND	µg/L	NA	1.0		07/18/01	KK
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/18/01	KK
Trichloroethene	ND	µg/L	NA	1.0		07/18/01	KK
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/18/01	KK
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/18/01	KK
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/18/01	KK
Vinyl chloride	ND	µg/L	NA	1.0		07/18/01	KK
o-Xylene	ND	µg/L	NA	1.0		07/18/01	KK
m,p-Xylene	ND	µg/L	NA	2.0		07/18/01	KK
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	80-120		07/18/01	KK
Surr: 4-Bromofluorobenzene	109	%REC	NA	86-115		07/18/01	KK
Surr: Dibromofluoromethane	99	%REC	NA	80-120		07/18/01	KK
Surr: Toluene-d8	103	%REC	NA	88-110		07/18/01	KK

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-02A

Client Sample ID: GP-44B (42.9 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	99	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	89	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107500
 Project: 2001-288-10
 Lab ID: 0107500-04A

Client Sample ID: GP-44C (78.6 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/16/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/20/01	TC
Bromobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		07/20/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		07/20/01	TC
Bromoform	ND	µg/L	NA	1.0		07/20/01	TC
Bromomethane	ND	µg/L	NA	1.0		07/20/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		07/20/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Chloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Chloroform	ND	µg/L	NA	1.0		07/20/01	TC
Chloromethane	ND	µg/L	NA	1.0		07/20/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		07/20/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		07/20/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/20/01	TC
Dibromomethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/20/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/20/01	TC
Methylene chloride	ND	µg/L	NA	1.0		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107500
 Project: 2001-288-10
 Lab ID: 0107500-04A

Client Sample ID: GP-44C (78.6 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/16/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/20/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Styrene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Toluene	ND	µg/L	NA	1.0		07/20/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
o-Xylene	ND	µg/L	NA	1.0		07/20/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	100	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	123	%REC	NA	86-115	S	07/20/01	TC
Surr: Dibromofluoromethane	89	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-05A

Client Sample ID: GP-44D
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	87	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	104	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107500
 Project: 2001-288-10
 Lab ID: 0107500-07A

Client Sample ID: GP-46B (41.9 FT)
 Site ID: RAVENSWOOD WV
 Collection Date: 7/16/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/20/01	TC
Bromobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		07/20/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		07/20/01	TC
Bromoform	ND	µg/L	NA	1.0		07/20/01	TC
Bromomethane	ND	µg/L	NA	1.0		07/20/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		07/20/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Chloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Chloroform	ND	µg/L	NA	1.0		07/20/01	TC
Chloromethane	ND	µg/L	NA	1.0		07/20/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		07/20/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		07/20/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/20/01	TC
Dibromomethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/20/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/20/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/20/01	TC
Methylene chloride	ND	µg/L	NA	1.0		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level.

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-07A

Client Sample ID: GP-46B (41.9 FT)
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/20/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Styrene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Toluene	ND	µg/L	NA	1.0		07/20/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/20/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/20/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
o-Xylene	ND	µg/L	NA	1.0		07/20/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	88	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT:	GAI CONSULTANTS (CHARLESTON)	Client Sample ID:	GP-46C (79.0 FT)
Lab Order:	0107500	Site ID:	RAVENSWOOD WV
Project:	2001-288-10	Collection Date:	7/16/01
Lab ID:	0107500-09A	Matrix:	LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	114	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	103	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	104	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-10A

Client Sample ID: GP-46D
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	114	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0108458
 Project: 2001-288-10
 Lab ID: 0108458-02A

Client Sample ID: GP-49A (48FT)
 Site ID: RAVENSWOOD, WV
 Collection Date: 08/13/2001
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		08/16/01	TC
Bromobenzene	ND	µg/L	NA	1.0		08/16/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		08/16/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		08/16/01	TC
Bromoform	ND	µg/L	NA	1.0		08/16/01	TC
Bromomethane	ND	µg/L	NA	1.0		08/16/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		08/16/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
Chloroethane	ND	µg/L	NA	1.0		08/16/01	TC
Chloroform	ND	µg/L	NA	1.0		08/16/01	TC
Chloromethane	ND	µg/L	NA	1.0		08/16/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		08/16/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		08/16/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		08/16/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		08/16/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		08/16/01	TC
Dibromomethane	ND	µg/L	NA	1.0		08/16/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		08/16/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		08/16/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		08/16/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		08/16/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		08/16/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/16/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/16/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		08/16/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		08/16/01	TC
Methylene chloride	ND	µg/L	NA	1.0		08/16/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108458
Project: 2001-288-10
Lab ID: 0108458-02A

Client Sample ID: GP-49A (48FT)
Site ID: RAVENSWOOD, WV
Collection Date: 08/13/2001
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		08/16/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
Styrene	ND	µg/L	NA	1.0		08/16/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/16/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/16/01	TC
Tetrachloroethene	7.8	µg/L	NA	1.0		08/16/01	TC
Toluene	ND	µg/L	NA	1.0		08/16/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		08/16/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/16/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/16/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		08/16/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		08/16/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		08/16/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/16/01	TC
o-Xylene	ND	µg/L	NA	1.0		08/16/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		08/16/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	80-120		08/16/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		08/16/01	TC
Surr: Dibromofluoromethane	108	%REC	NA	80-120		08/16/01	TC
Surr: Toluene-d8	97	%REC	NA	88-110		08/16/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-02A

Client Sample ID: GP-51A (57.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		08/21/01	TC
Bromobenzene	ND	µg/L	NA	1.0		08/21/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		08/21/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		08/21/01	TC
Bromoform	ND	µg/L	NA	1.0		08/21/01	TC
Bromomethane	ND	µg/L	NA	1.0		08/21/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		08/21/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
Chloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Chloroform	ND	µg/L	NA	1.0		08/21/01	TC
Chloromethane	ND	µg/L	NA	1.0		08/21/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		08/21/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		08/21/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		08/21/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		08/21/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		08/21/01	TC
Dibromomethane	ND	µg/L	NA	1.0		08/21/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		08/21/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		08/21/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		08/21/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		08/21/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/21/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/21/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		08/21/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		08/21/01	TC
Methylene chloride	ND	µg/L	NA	1.0		08/21/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-02A

Client Sample ID: GP-51A (57.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		08/21/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
Styrene	ND	µg/L	NA	1.0		08/21/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Tetrachloroethene	2.9	µg/L	NA	1.0		08/21/01	TC
Toluene	ND	µg/L	NA	1.0		08/21/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		08/21/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		08/21/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		08/21/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		08/21/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/21/01	TC
o-Xylene	ND	µg/L	NA	1.0		08/21/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		08/21/01	TC
Surr: 1,2-Dichloroethane-d4	95	%REC	NA	80-120		08/21/01	TC
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		08/21/01	TC
Surr: Dibromofluoromethane	100	%REC	NA	80-120		08/21/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		08/21/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-06A

Client Sample ID: GP-53A (19.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		08/22/01	TC
Bromobenzene	ND	µg/L	NA	1.0		08/22/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		08/22/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		08/22/01	TC
Bromoform	ND	µg/L	NA	1.0		08/22/01	TC
Bromomethane	ND	µg/L	NA	1.0		08/22/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		08/22/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
Chloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Chloroform	ND	µg/L	NA	1.0		08/22/01	TC
Chloromethane	ND	µg/L	NA	1.0		08/22/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		08/22/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		08/22/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		08/22/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		08/22/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		08/22/01	TC
Dibromomethane	ND	µg/L	NA	1.0		08/22/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
cis-1,2-Dichloroethene	4.7	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		08/22/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		08/22/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		08/22/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		08/22/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/22/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		08/22/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		08/22/01	TC
Methylene chloride	ND	µg/L	NA	1.0		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-06A

Client Sample ID: GP-53A (19.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		08/22/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
Styrene	ND	µg/L	NA	1.0		08/22/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Toluene	ND	µg/L	NA	1.0		08/22/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		08/22/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		08/22/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
o-Xylene	ND	µg/L	NA	1.0		08/22/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	78	%REC	NA	80-120	S	08/22/01	TC
Surr: 4-Bromofluorobenzene	111	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	100	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	97	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-12A

Client Sample ID: GP-55A (43.0FT)
Site ID: RAVENSWOOD WV
Collection Date: 8/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	10.3	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	97	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	93	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	105	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	97	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107345
Project: 2001-288-10
Lab ID: 0107345-07A

Client Sample ID: TRIP BLANK
Site ID: RAVENSWOOD WV
Collection Date: 7/12/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/14/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/14/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/14/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/14/01	TC
Surr: 1,2-Dichloroethane-d4	110	%REC	NA	80-120		07/14/01	TC
Surr: 4-Bromofluorobenzene	96	%REC	NA	86-115		07/14/01	TC
Surr: Dibromofluoromethane	101	%REC	NA	80-120		07/14/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-13A

Client Sample ID: TRIP BLANK 7-16
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	103	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	91	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	98	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-17A

Client Sample ID: TRIP BLANK 7-17
Site ID: RAVENSWOOD WV
Collection Date: 7/17/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	104	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	117	%REC	NA	86-115	S	07/20/01	TC
Surr: Dibromofluoromethane	95	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 27-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107539
Project: 2001-288-10
Lab ID: 0107539-03A

Client Sample ID: TRIP BLANK
Site ID: RAVENSWOOD, WV
Collection Date: 7/18/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/27/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/27/01	TC
Surr: 1,2-Dichloroethane-d4	87	%REC	NA	80-120		07/27/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		07/27/01	TC
Surr: Toluene-d8	111	%REC	NA	88-110	S	07/27/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107690
Project: 2001-288-10
Lab ID: 0107690-05A

Client Sample ID: TRIP BLANK
Site ID: RAVENSWOOD, WV
Collection Date: 7/23/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		08/01/01	TC
Bromobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		08/01/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		08/01/01	TC
Bromoform	ND	µg/L	NA	1.0		08/01/01	TC
Bromomethane	ND	µg/L	NA	1.0		08/01/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		08/01/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Chloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Chloroform	2.2	µg/L	NA	1.0		08/01/01	TC
Chloromethane	ND	µg/L	NA	1.0		08/01/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		08/01/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		08/01/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		08/01/01	TC
Dibromomethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		08/01/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		08/01/01	TC
Methylene chloride	ND	µg/L	NA	1.0		08/01/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107690
Project: 2001-288-10
Lab ID: 0107690-05A

Client Sample ID: TRIP BLANK
Site ID: RAVENSWOOD, WV
Collection Date: 7/23/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		08/01/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Styrene	ND	µg/L	NA	1.0		08/01/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/01/01	TC
Toluene	ND	µg/L	NA	1.0		08/01/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/01/01	TC
o-Xylene	ND	µg/L	NA	1.0		08/01/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		08/01/01	TC
Surr: 1,2-Dichloroethane-d4	111	%REC	NA	80-120		08/01/01	TC
Surr: 4-Bromofluorobenzene	107	%REC	NA	86-115		08/01/01	TC
Surr: Dibromofluoromethane	109	%REC	NA	80-120		08/01/01	TC
Surr: Toluene-d8	97	%REC	NA	88-110		08/01/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: TRIP BLANK

Lab ID: 0110272-08A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD.PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: TRIP BLANK

Lab ID: 0110272-08A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Toluene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	103	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	109	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107500
 Project: 2001-288-10
 Lab ID: 0107500-16A

Client Sample ID: FIELD BLANK 7-17
 Site ID: RAVENSWOOD WV
 Collection Date: 7/17/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	95	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

AR300937

REI Consultants Inc.

Date: 27-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107539
Project: 2001-288-10
Lab ID: 0107539-04A

Client Sample ID: FIELD BLANK
Site ID: RAVENSWOOD, WV
Collection Date: 7/18/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/27/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/27/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/27/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/27/01	TC
Surr: 1,2-Dichloroethane-d4	92	%REC	NA	80-120		07/27/01	TC
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		07/27/01	TC
Surr: Toluene-d8	105	%REC	NA	88-110		07/27/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107690
Project: 2001-288-10
Lab ID: 0107690-04A

Client Sample ID: FIELD BLANK
Site ID: RAVENSWOOD, WV
Collection Date: 7/23/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		08/01/01	TC
Bromobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		08/01/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		08/01/01	TC
Bromoform	ND	µg/L	NA	1.0		08/01/01	TC
Bromomethane	ND	µg/L	NA	1.0		08/01/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		08/01/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Chloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Chloroform	2.3	µg/L	NA	1.0		08/01/01	TC
Chloromethane	ND	µg/L	NA	1.0		08/01/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		08/01/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		08/01/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		08/01/01	TC
Dibromomethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		08/01/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		08/01/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		08/01/01	TC
Methylene chloride	ND	µg/L	NA	1.0		08/01/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107690
 Project: 2001-288-10
 Lab ID: 0107690-04A

Client Sample ID: FIELD BLANK
 Site ID: RAVENSWOOD, WV
 Collection Date: 7/23/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		08/01/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Styrene	ND	µg/L	NA	1.0		08/01/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/01/01	TC
Toluene	ND	µg/L	NA	1.0		08/01/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/01/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/01/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		08/01/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		08/01/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		08/01/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/01/01	TC
o-Xylene	ND	µg/L	NA	1.0		08/01/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		08/01/01	TC
Surr: 1,2-Dichloroethane-d4	114	%REC	NA	80-120		08/01/01	TC
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		08/01/01	TC
Surr: Dibromofluoromethane	104	%REC	NA	80-120		08/01/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		08/01/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-11A

Client Sample ID: FIELD SAMPLE 7-16 0830
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	93	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	99	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	87	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	99	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 23-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107500
Project: 2001-288-10
Lab ID: 0107500-12A

Client Sample ID: FIELD SAMPLE 7-16 1435
Site ID: RAVENSWOOD WV
Collection Date: 7/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/20/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/20/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/20/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/20/01	TC
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		07/20/01	TC
Surr: 4-Bromofluorobenzene	107	%REC	NA	86-115		07/20/01	TC
Surr: Dibromofluoromethane	107	%REC	NA	80-120		07/20/01	TC
Surr: Toluene-d8	98	%REC	NA	88-110		07/20/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-04A

Client Sample ID: RB-01
Site ID: RAVENSWOOD WV
Collection Date: 8/15/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/21/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/21/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/21/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/21/01	TC
Surr: 1,2-Dichloroethane-d4	96	%REC	NA	80-120		08/21/01	TC
Surr: 4-Bromofluorobenzene	99	%REC	NA	86-115		08/21/01	TC
Surr: Dibromofluoromethane	101	%REC	NA	80-120		08/21/01	TC
Surr: Toluene-d8	101	%REC	NA	88-110		08/21/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0108530
Project: 2001-288-10
Lab ID: 0108530-10A

Client Sample ID: RB-02
Site ID: RAVENSWOOD WV
Collection Date: 8/16/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		08/22/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		08/22/01	TC
Trichloroethene	ND	µg/L	NA	1.0		08/22/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		08/22/01	TC
Surr: 1,2-Dichloroethane-d4	92	%REC	NA	80-120		08/22/01	TC
Surr: 4-Bromofluorobenzene	95	%REC	NA	86-115		08/22/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		08/22/01	TC
Surr: Toluene-d8	102	%REC	NA	88-110		08/22/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level



REI Consultants, Inc.
225 Industrial Park Rd.
P.O. Box 286, Beaver, WV 25813
Phone: 304-255-2500 or 800-999-0105
FAX: 304-255-2572
e-mail: rlabs@reiclabs.com

CHAIN OF CUSTODY RECORD

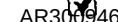
NO. 10-590

CLIENT: GAI CONSULTANTS, INC.
ADDRESS: 3412 CHESTERFIELD AVE.
CITY/STATE/ZIP: CHARLESTON, WV 25304
BILL TO: CHARLESTON, WV 25304
CITY/STATE/ZIP: ABOVE
PURCHASE ORDER # _____
QUOTE # _____

CONTACT PERSON: CHRIS BUTLER
TELEPHONE #: 926-8100
FAX #: 926-8180
E-MAIL ADDRESS: C.butler@gaiconsultants.com
SITE ID & STATE: RAVENSWOOD, WV
PROJECT ID: 2001-288-10
SAMPLER: DUSTIN HOLMES

PRESERVATIVE CODES

SAMPLE LOG AND ANALYSIS REQUEST	TURNAROUND TIME REQUIREMENTS REGULAR: _____ *RUSH: _____ 5-Day _____ 3-Day _____ 2-Day <u>X</u> 1-Day _____ *Rush work needs prior Laboratory approval and will include surcharges	PRESERVATIVES 0 No Preservative 1 Hydrochloric Acid 2 Nitric Acid 3 Sulfuric Acid 4 Sodium Thiosulfate 5 Sodium Hydroxide 6 Zinc Acetate 7 EDTA	NOTE PRESERVATIVES →																		
			ANALYSIS REQUESTED & METHOD <u>VOC's Limited Suite</u>																		
SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB																	COMMENTS
GP-38 (48 FT)	4 VOLUMES	7-10-01 14:30	WATER	GRAB	✓														Method SW8260B		
GP-38 (76 FT)	4 VOLUMES	7-10-01 15:45			✓														Limited Suite 1st attached.		
GP-42 (44 FT)	4 VOLUMES	7-11-01 14:14			✓																
GP-42 (78 FT)	4 VOLUMES	7-11-01 15:30			✓																
GP-40 (45 FT)	4 VOLUMES	7-11-01 10:15			✓																
GP-40 (77.3 FT)	4 VOLUMES	7-11-01 11:35			✓																
TRIP BLANK	4 VOLUMES	7-11-01 17:30			✓																
GP-38 (48 FT)	1 GLASS JAR	7-11-01 14:00	SOIL	✓	✓																
GP-42B (78 FT) Dup	4-VIALS	7-11-01 15:30	water	✓	✓																
Relinquished by: (Signature) <u>Dustin Holmes</u>		7-11-01 17:44 Date/Time	Received by: (Signature) <u>[Signature]</u>		7-12-01 9:30 Date/Time	Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time	
Relinquished by: (Signature) <u>[Signature]</u>		7-12-01 2:40 Date/Time	Received by: (Signature) <u>[Signature]</u>		7-12-01 14:40 Date/Time	3.0 Temperature Upon Arrival		☐ FAX Results		AR30024		☐ Email Results									



[illegible]

CLIENT: GAI CONSULTANTS, INC. CONTACT PERSON: CHRIS BUTLER

ADDRESS: 3412 CHESTERFIELD AVE. TELEPHONE #: 926-8100

CITY/STATE/ZIP: CHARLESTON, WV 25304 FAX #: 926-8180

BILL TO: ABOVE

E-MAIL ADDRESS: Cbutter@gaiconsultants.com

CITY/STATE/ZIP:

SITE ID & STATE: RAVENSWOOD, WV

PURCHASE ORDER #

PROJECT ID: 7001-288-10

QUOTE #

SAMPLER: DUSTIN HOLMES

El Consultants, Inc.

225 Industrial Park Rd.

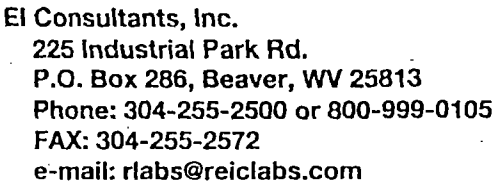
P.O. Box 286, Beaver, WV 25813

Phone: 304-255-2500 or 800-999-0105

FAX: 304-255-2572

e-mail: rlabs@reiclabs.com

[illegible]



NO. 105

CHAIN NO. _____

CLIENT: GAI CONSULTANTS, INC.

ADDRESS: 3412 CHESTERFIELD AVE.

CITY/STATE/ZIP: CHARLESTON, WV 25304

BILL TO: ABOVE

CITY/STATE/ZIP: _____

PURCHASE ORDER # _____

QUOTE # _____

CONTACT PERSON: CHRIS BUTLER
TELEPHONE #: 926-8100
FAX #: 926-8180
E-MAIL ADDRESS: C.butler@gaiconsultants.com
SITE ID & STATE: RAVENSWOOD, WV
PROJECT ID: 2001-288-10
SAMPLER: DUSTIN HOLMES

[illegible]

CHAIN OF CUSTODY RECORD

NO. 50

CLIENT: GAI CONSULTANTS, INC.CONTACT PERSON: CHRIS BUTLERADDRESS: 3412 CHESTERFIELD AVE.TELEPHONE/FAX: 926-8100 / 926-8180CITY/STATE/ZIP: CHARLESTON, WV 25304SITE ID & STATE: RAVENSWOOD, WVBILL TO: ABOVEPROJECT ID: 2001-288-10

CITY/STATE/ZIP: _____

SAMPLER: DUSTIN HOLMES

EIC Laboratory
 225 Industrial Park Rd.
 P.O. Box 286, Beaver, WV 25813
 Phone: 304-255-2500 or 800-999-0105
 FAX: 304-255-2572

PRESERVATIVE CODES

TURNAROUND TIME
REQUIREMENTS

REGULAR: _____

*RUSH: _____ 5-Day
 _____ 3-Day
 _____ 2-Day
 _____ 1-Day

*Rush work needs prior Laboratory approval
 and will include surcharges

PRESERVATIVES

- 0 No Preservative
 1 Hydrochloric Acid
 2 Nitric Acid
 3 Sulfuric Acid
 4 Sodium Thiosulfate
 5 Sodium Hydroxide
 6 Zinc Acetate
 7 EDTA

NOTE PRESERVATIVES →

ANALYSIS REQUESTED & METHOD
 VOCs - LIMITED SUITE
 VOCs - FULL SUITE

SAMPLE LOG AND ANALYSIS REQUEST	TURNAROUND TIME REQUIREMENTS		PRESERVATIVES		NOTE PRESERVATIVES →	PRESERVATIVE CODES	COMMENTS
	REGULAR: _____	*RUSH: _____	0 No Preservative	1 Hydrochloric Acid			
SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB			
P-49 (48 FT)	4 VIALS	8-13-01 14:10	WATER	GRAB	✓		Met HOP SW 8260 B
D-49A (48 FT)	4 VIALS	8-13-01 14:10	↓	↓	✓		
P-49 (81.5 FT)	4 VIALS	8-13-01 15:40	↓	↓	✓		
FIELD BLANK	4 VIALS	8-13-01 15:10	↓	↓	✓	DDH	
RIP BLANK	4 VIALS	8-13-01 17:00	↓	↓	✓	DDH	
P-50 (52.0 FT)	4 VIALS	8-14-01 9:35	WATER	GRAB	✓		
P-50 (81.2 FT)	4 VIALS	8-14-01 11:15	↓	↓	✓		
P-52 (56.2 FT)	4 VIALS	8-14-01 14:40	↓	↓	✓		
P-52 (92.5 FT)	4 VIALS	8-14-01 16:15	↓	↓	✓		
P-49 (48 FT)	1 JAR	8-13-01 13:15	SOIL	GRAB	✓		
Relinquished by: (Signature) <u>Dustin Holmes</u>		Date/Time: <u>8-14-01 17:30</u>	Received by: (Signature) <u>[Signature]</u>		Date/Time: <u>8/15/01 15:30</u>	Received by: (Signature) <u>[Signature]</u>	
Requests:		Sample Condition: Good? Y N		Temperature Upon Arrival: <u>2</u> °C		AR300952	
ent:	Hand-Del:	Courier:	UPS:	FedEx:	Shipment Date:	FAX Results: Y N	

APPENDIX B

Geoprobe Soil Analytical Results and Chain of Custody Forms

REI Consultants Inc.

Date: 17-Jul-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107317
Project: 2001-288-10
Lab ID: 0107317-08A

Client Sample ID: GP-38(48FT)SOIL
Site ID: RAVENSWOOD WV
Collection Date: 7/10/01
Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE		SM2540 B					
Percent Moisture	21	wt%	NA	0.5		07/13/01	CJH
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	5		07/13/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	5		07/13/01	TC
Tetrachloroethene	ND	µg/Kg	NA	5		07/13/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	5		07/13/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	5		07/13/01	TC
Trichloroethene	ND	µg/Kg	NA	5		07/13/01	TC
Vinyl chloride	ND	µg/Kg	NA	5		07/13/01	TC
Surr: 1,2-Dichloroethane-d4	84	%REC	NA	80-120		07/13/01	TC
Surr: 4-Bromofluorobenzene	94	%REC	NA	74-121		07/13/01	TC
Surr: Dibromofluoromethane	96	%REC	NA	80-120		07/13/01	TC
Surr: Toluene-d8	101	%REC	NA	81-117		07/13/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 17-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: GP-49 (48FT)

Lab Order: 0108458

Site ID: RAVENSWOOD, WV

Project: 2001-288-10

Collection Date: 08/13/2001

Lab ID: 0108458-08A

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE		SM2540 B					
Percent Moisture	8.0	wt%	NA	0.5		08/16/01	CJH
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		08/16/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		08/16/01	TC
Tetrachloroethene	ND	µg/Kg	NA	2		08/16/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		08/16/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		08/16/01	TC
Trichloroethene	ND	µg/Kg	NA	2		08/16/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		08/16/01	TC
Surr: 1,2-Dichloroethane-d4	84	%REC	NA	72-120		08/16/01	TC
Surr: 4-Bromofluorobenzene	101	%REC	NA	74-121		08/16/01	TC
Surr: Dibromofluoromethane	105	%REC	NA	75-120		08/16/01	TC
Surr: Toluene-d8	109	%REC	NA	81-117		08/16/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

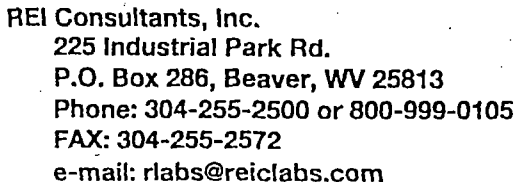
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

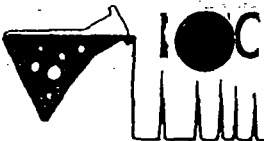


NO. 16-590

CHAIN
CLIENT: GAI CONSULTANTS, INC.
ADDRESS: 3412 CHESTERFIELD AVE.
CITY/STATE/ZIP: CHARLESTON, WV 25304
BILL TO: CHARLESTON, WV 25304
CITY/STATE/ZIP: ABOVE
PURCHASE ORDER # _____
QUOTE # _____

CONTACT PERSON: CHRIS BUTLER
TELEPHONE #: 926-8100
FAX #: 926-8180
E-MAIL ADDRESS: C.butler@gaiconsultants.com
SITE ID & STATE: RAVENSWOOD, WV
PROJECT ID: 2001-288-10
SAMPLER: DUSTIN HOLMES

[illegible]



CHAIN OF CUSTODY RECORD

No. 5

CLIENT: GAI CONSULTANTS, INC.CONTACT PERSON: CHRIS BUTLERADDRESS: 3412 CHESTERFIELD AVE.TELEPHONE/FAX: 926-8100 / 926-8180CITY/STATE/ZIP: CHARLESTON, WV 25304SITE ID & STATE: RAVENSWOOD, WVBILL TO: ABOVEPROJECT ID: 2001-288-10

CITY/STATE/ZIP: _____

SAMPLER: DUSTIN HOLMES

REIC Laboratory

225 Industrial Park Rd.

P.O. Box 286, Beaver, WV 25813

Phone: 304-255-2500 or 800-999-0105

FAX: 304-255-2572

PRESERVATIVE CODES

PRESERVATIVES

NOTE PRESERVATIVES →

- 0 No Preservative
- 1 Hydrochloric Acid
- 2 Nitric Acid
- 3 Sulfuric Acid
- 4 Sodium Thiosulfate
- 5 Sodium Hydroxide
- 6 Zinc Acetate
- 7 EDTA

TURNAROUND TIME
REQUIREMENTS

REGULAR: _____

*RUSH: _____ 5-Day

_____ 3-Day

✓ _____ 2-Day

_____ 1-Day

*Rush work needs prior Laboratory approval
and will include surchargesSAMPLE LOG
AND
ANALYSIS REQUESTANALYSIS REQUESTED & METHOD
VOCs - LIMITED SUITE
VOCs - FULL SUITE

SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING	MATRIX	SAMPLE											COMMENTS		
		DATE / TIME		COMP / GRAB													
GP-49 (48 FT)	4 VIALS	8-13-01 14:10	WATER	GRAB	✓												MET/Top SW 8260 B
GP-49A (48 FT)	4 VIALS	8-13-01 14:10	↓	↓		✓											
GP-49 (81.5 FT)	4 VIALS	8-13-01 15:40	↓	↓	✓												
FIELD BLANK	4 VIALS	8-13-01 15:10	↓	↓	✓	DDH											
TRIP BLANK	4 VIALS	8-13-01 17:00	↓	↓	✓	DDH											
GP-50 (52.0 FT)	4 VIALS	8-14-01 9:35	WATER	GRAB	✓												
GP-50 (81.2 FT)	4 VIALS	8-14-01 11:15	↓	↓	✓												
GP-52 (56.2 FT)	4 VIALS	8-14-01 14:40	↓	↓	✓												
GP-52 (92.5 FT)	4 VIALS	8-14-01 16:15	↓	↓	✓												
GP-49 (48 FT)	1 JAR	8-13-01 13:45	SOIL	GRAB	✓												
Dustin Holmes Relinquished by: (Signature)		8-14-01 17:30 Date/Time	[Signature] Received by: (Signature)		8/15/01 1605 Date/Time	[Signature] Relinquished by: (Signature)		8/15/01 1539 Date/Time	[Signature] Received by: (Signature)		8/15/01 1530 Date/Time						

Special Requests:

Sample Condition: Good? Y N

Temperature Upon Arrival _____ °C

Shipment:

Hand-Del:

Courier:

UPS:

FedEx:

Shipment Date:

FAX Results: Y N

AR300959

APPENDIX C

Well Groundwater Analytical Results and Chain of Custody Forms

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107690
 Project: 2001-288-10
 Lab ID: 0107690-01A

Client Sample ID: PW-2
 Site ID: RAVENSWOOD, WV
 Collection Date: 7/23/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/30/01	TC
Bromobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		07/30/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		07/30/01	TC
Bromoform	ND	µg/L	NA	1.0		07/30/01	TC
Bromomethane	ND	µg/L	NA	1.0		07/30/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		07/30/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Chloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Chloroform	ND	µg/L	NA	1.0		07/30/01	TC
Chloromethane	ND	µg/L	NA	1.0		07/30/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		07/30/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		07/30/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/30/01	TC
Dibromomethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/30/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/30/01	TC
Methylene chloride	ND	µg/L	NA	1.0		07/30/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: PW-2

Lab Order: 0107690

Site ID: RAVENSWOOD, WV

Project: 2001-288-10

Collection Date: 7/23/01

Lab ID: 0107690-01A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/30/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Styrene	ND	µg/L	NA	1.0		07/30/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/30/01	TC
Toluene	ND	µg/L	NA	1.0		07/30/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/30/01	TC
o-Xylene	ND	µg/L	NA	1.0		07/30/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		07/30/01	TC
Surr: 1,2-Dichloroethane-d4	111	%REC	NA	80-120		07/30/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		07/30/01	TC
Surr: Dibromofluoromethane	102	%REC	NA	80-120		07/30/01	TC
Surr: Toluene-d8	104	%REC	NA	88-110		07/30/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107690
 Project: 2001-288-10
 Lab ID: 0107690-02A

Client Sample ID: PW-3
 Site ID: RAVENSWOOD, WV
 Collection Date: 7/23/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/30/01	TC
Bromobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		07/30/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		07/30/01	TC
Bromoform	ND	µg/L	NA	1.0		07/30/01	TC
Bromomethane	ND	µg/L	NA	1.0		07/30/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		07/30/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Chloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Chloroform	ND	µg/L	NA	1.0		07/30/01	TC
Chloromethane	ND	µg/L	NA	1.0		07/30/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		07/30/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		07/30/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/30/01	TC
Dibromomethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/30/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/30/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/30/01	TC
Methylene chloride	ND	µg/L	NA	1.0		07/30/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)

Client Sample ID: PW-3

Lab Order: 0107690

Site ID: RAVENSWOOD, WV

Project: 2001-288-10

Collection Date: 7/23/01

Lab ID: 0107690-02A

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/30/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Styrene	ND	µg/L	NA	1.0		07/30/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Tetrachloroethene	22.9	µg/L	NA	1.0		07/30/01	TC
Toluene	ND	µg/L	NA	1.0		07/30/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/30/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/30/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/30/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/30/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/30/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/30/01	TC
o-Xylene	ND	µg/L	NA	1.0		07/30/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		07/30/01	TC
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	80-120		07/30/01	TC
Surr: 4-Bromofluorobenzene	111	%REC	NA	86-115		07/30/01	TC
Surr: Dibromofluoromethane	98	%REC	NA	80-120		07/30/01	TC
Surr: Toluene-d8	100	%REC	NA	88-110		07/30/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
 Lab Order: 0107690
 Project: 2001-288-10
 Lab ID: 0107690-03A

Client Sample ID: PW-5
 Site ID: RAVENSWOOD, WV
 Collection Date: 7/23/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
Benzene	ND	µg/L	NA	1.0		07/31/01	TC
Bromobenzene	ND	µg/L	NA	1.0		07/31/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		07/31/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		07/31/01	TC
Bromoform	ND	µg/L	NA	1.0		07/31/01	TC
Bromomethane	ND	µg/L	NA	1.0		07/31/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		07/31/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
Chloroethane	ND	µg/L	NA	1.0		07/31/01	TC
Chloroform	ND	µg/L	NA	1.0		07/31/01	TC
Chloromethane	ND	µg/L	NA	1.0		07/31/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		07/31/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		07/31/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		07/31/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		07/31/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		07/31/01	TC
Dibromomethane	ND	µg/L	NA	1.0		07/31/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		07/31/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		07/31/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		07/31/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		07/31/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/31/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		07/31/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		07/31/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		07/31/01	TC
2,2-Dichloropropane	ND	µg/L	NA	1.0		07/31/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		07/31/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/31/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		07/31/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		07/31/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		07/31/01	TC
Methylene chloride	ND	µg/L	NA	1.0		07/31/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 21-Aug-01

CLIENT: GAI CONSULTANTS (CHARLESTON)
Lab Order: 0107690
Project: 2001-288-10
Lab ID: 0107690-03A

Client Sample ID: PW-5
Site ID: RAVENSWOOD, WV
Collection Date: 7/23/01
Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
Naphthalene	ND	µg/L	NA	1.0		07/31/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
Styrene	ND	µg/L	NA	1.0		07/31/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/31/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		07/31/01	TC
Tetrachloroethene	ND	µg/L	NA	1.0		07/31/01	TC
Toluene	ND	µg/L	NA	1.0		07/31/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		07/31/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		07/31/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		07/31/01	TC
Trichloroethene	ND	µg/L	NA	1.0		07/31/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		07/31/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		07/31/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		07/31/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		07/31/01	TC
o-Xylene	ND	µg/L	NA	1.0		07/31/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		07/31/01	TC
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	80-120		07/31/01	TC
Surr: 4-Bromofluorobenzene	108	%REC	NA	86-115		07/31/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		07/31/01	TC
Surr: Toluene-d8	103	%REC	NA	88-110		07/31/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-1

Lab ID: 0110795-01A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/31/01	WM
2-Hexanone	ND	µg/L	NA	10.0		10/31/01	WM
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/31/01	WM
Acetone	ND	µg/L	NA	10.0		10/31/01	WM
Acrolein	ND	µg/L	NA	10.0		10/31/01	WM
Acrylonitrile	ND	µg/L	NA	10.0		10/31/01	WM
Carbon disulfide	ND	µg/L	NA	10.0		10/31/01	WM
Iodomethane	ND	µg/L	NA	10.0		10/31/01	WM
Vinyl acetate	ND	µg/L	NA	10.0		10/31/01	WM
Benzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromodichloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromoform	ND	µg/L	NA	1.0		10/31/01	WM
Bromomethane	ND	µg/L	NA	1.0		10/31/01	WM
n-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
sec-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
tert-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Carbon tetrachloride	ND	µg/L	NA	1.0		10/31/01	WM
Chlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Chloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Chloroform	ND	µg/L	NA	1.0		10/31/01	WM
Chloromethane	ND	µg/L	NA	1.0		10/31/01	WM
2-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
4-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
Dibromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/31/01	WM
Dibromomethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-1

Lab ID: 0110795-01A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
Ethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/31/01	WM
Isopropylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/31/01	WM
Methylene chloride	ND	µg/L	NA	1.0		10/31/01	WM
Naphthalene	ND	µg/L	NA	1.0		10/31/01	WM
n-Propylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Styrene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Tetrachloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Toluene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Vinyl chloride	ND	µg/L	NA	1.0		10/31/01	WM
o-Xylene	ND	µg/L	NA	1.0		10/31/01	WM
m,p-Xylene	ND	µg/L	NA	2.0		10/31/01	WM
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		10/31/01	WM
Surr: 4-Bromofluorobenzene	98	%REC	NA	88-115		10/31/01	WM
Surr: Dibromofluoromethane	100	%REC	NA	80-120		10/31/01	WM
Surr: Toluene-d8	101	%REC	NA	88-110		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-2

Lab ID: 0110795-02A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/31/01	WM
2-Hexanone	ND	µg/L	NA	10.0		10/31/01	WM
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/31/01	WM
Acetone	ND	µg/L	NA	10.0		10/31/01	WM
Acrolein	ND	µg/L	NA	10.0		10/31/01	WM
Acrylonitrile	ND	µg/L	NA	10.0		10/31/01	WM
Carbon disulfide	ND	µg/L	NA	10.0		10/31/01	WM
Iodomethane	ND	µg/L	NA	10.0		10/31/01	WM
Vinyl acetate	ND	µg/L	NA	10.0		10/31/01	WM
Benzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromodichloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromoform	ND	µg/L	NA	1.0		10/31/01	WM
Bromomethane	ND	µg/L	NA	1.0		10/31/01	WM
n-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
sec-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
tert-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Carbon tetrachloride	ND	µg/L	NA	1.0		10/31/01	WM
Chlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Chloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Chloroform	ND	µg/L	NA	1.0		10/31/01	WM
Chloromethane	ND	µg/L	NA	1.0		10/31/01	WM
2-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
4-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
Dibromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/31/01	WM
Dibromomethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-2

Lab ID: 0110795-02A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
Ethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/31/01	WM
Isopropylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/31/01	WM
Methylene chloride	ND	µg/L	NA	1.0		10/31/01	WM
Naphthalene	ND	µg/L	NA	1.0		10/31/01	WM
n-Propylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Styrene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Tetrachloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Toluene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Trichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Vinyl chloride	ND	µg/L	NA	1.0		10/31/01	WM
o-Xylene	ND	µg/L	NA	1.0		10/31/01	WM
m,p-Xylene	ND	µg/L	NA	2.0		10/31/01	WM
Surr: 1,2-Dichloroethane-d4	93	%REC	NA	80-120		10/31/01	WM
Surr: 4-Bromofluorobenzene	94	%REC	NA	88-115		10/31/01	WM
Surr: Dibromofluoromethane	98	%REC	NA	80-120		10/31/01	WM
Surr: Toluene-d8	101	%REC	NA	88-110		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-3

Lab ID: 0110795-03A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/31/01	WM
2-Hexanone	ND	µg/L	NA	10.0		10/31/01	WM
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/31/01	WM
Acetone	ND	µg/L	NA	10.0		10/31/01	WM
Acrolein	ND	µg/L	NA	10.0		10/31/01	WM
Acrylonitrile	ND	µg/L	NA	10.0		10/31/01	WM
Carbon disulfide	ND	µg/L	NA	10.0		10/31/01	WM
Iodomethane	ND	µg/L	NA	10.0		10/31/01	WM
Vinyl acetate	ND	µg/L	NA	10.0		10/31/01	WM
Benzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromodichloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromoform	ND	µg/L	NA	1.0		10/31/01	WM
Bromomethane	ND	µg/L	NA	1.0		10/31/01	WM
n-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
sec-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
tert-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Carbon tetrachloride	ND	µg/L	NA	1.0		10/31/01	WM
Chlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Chloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Chloroform	ND	µg/L	NA	1.0		10/31/01	WM
Chloromethane	ND	µg/L	NA	1.0		10/31/01	WM
2-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
4-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
Dibromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/31/01	WM
Dibromomethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-3

Lab ID: 0110795-03A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
Ethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/31/01	WM
Isopropylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/31/01	WM
Methylene chloride	ND	µg/L	NA	1.0		10/31/01	WM
Naphthalene	ND	µg/L	NA	1.0		10/31/01	WM
n-Propylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Styrene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Tetrachloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Toluene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Trichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Vinyl chloride	ND	µg/L	NA	1.0		10/31/01	WM
o-Xylene	ND	µg/L	NA	1.0		10/31/01	WM
m,p-Xylene	ND	µg/L	NA	2.0		10/31/01	WM
Surr: 1,2-Dichloroethane-d4	98	%REC	NA	80-120		10/31/01	WM
Surr: 4-Bromofluorobenzene	98	%REC	NA	86-115		10/31/01	WM
Surr: Dibromofluoromethane	101	%REC	NA	80-120		10/31/01	WM
Surr: Toluene-d8	103	%REC	NA	88-110		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-4

Lab ID: 0110795-04A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/31/01	WM
2-Hexanone	ND	µg/L	NA	10.0		10/31/01	WM
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/31/01	WM
Acetone	ND	µg/L	NA	10.0		10/31/01	WM
Acrolein	ND	µg/L	NA	10.0		10/31/01	WM
Acrylonitrile	ND	µg/L	NA	10.0		10/31/01	WM
Carbon disulfide	ND	µg/L	NA	10.0		10/31/01	WM
Iodomethane	ND	µg/L	NA	10.0		10/31/01	WM
Vinyl acetate	ND	µg/L	NA	10.0		10/31/01	WM
Benzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Bromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromodichloromethane	ND	µg/L	NA	1.0		10/31/01	WM
Bromoform	ND	µg/L	NA	1.0		10/31/01	WM
Bromomethane	ND	µg/L	NA	1.0		10/31/01	WM
n-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
sec-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
tert-Butylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Carbon tetrachloride	ND	µg/L	NA	1.0		10/31/01	WM
Chlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Chloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Chloroform	ND	µg/L	NA	1.0		10/31/01	WM
Chloromethane	ND	µg/L	NA	1.0		10/31/01	WM
2-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
4-Chlorotoluene	ND	µg/L	NA	1.0		10/31/01	WM
Dibromochloromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/31/01	WM
Dibromomethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 05-Nov-01

Client: WEST VIRGINIA DEP - CHARLESTON

Lab Order: 0110795

Client Sample ID: MW-4

Lab ID: 0110795-04A

Project: 2001-288-10

Collection Date: 10/25/01

Site ID: RAVENSWOOD WV

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,1-Dichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/31/01	WM
Ethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/31/01	WM
Isopropylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/31/01	WM
Methylene chloride	ND	µg/L	NA	1.0		10/31/01	WM
Naphthalene	ND	µg/L	NA	1.0		10/31/01	WM
n-Propylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Styrene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Tetrachloroethene	8.0	µg/L	NA	1.0		10/31/01	WM
Toluene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/31/01	WM
Trichloroethene	ND	µg/L	NA	1.0		10/31/01	WM
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/31/01	WM
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/31/01	WM
Vinyl chloride	ND	µg/L	NA	1.0		10/31/01	WM
o-Xylene	ND	µg/L	NA	1.0		10/31/01	WM
m,p-Xylene	ND	µg/L	NA	2.0		10/31/01	WM
Surr: 1,2-Dichloroethane-d4	101	%REC	NA	80-120		10/31/01	WM
Surr: 4-Bromofluorobenzene	101	%REC	NA	88-115		10/31/01	WM
Surr: Dibromofluoromethane	101	%REC	NA	80-120		10/31/01	WM
Surr: Toluene-d8	100	%REC	NA	88-110		10/31/01	WM

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-5S

Lab ID: 0110272-01A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-5S

Lab ID: 0110272-01A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	324	µg/L	NA	100		10/11/01	TC
Toluene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	102	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	110	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	109	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-5D

Lab ID: 0110272-02A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	1.7	µg/L	NA	1.0		10/10/01	TC
Bromoform	1.3	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	1.3	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	3.3	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-5D

Lab ID: 0110272-02A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	7.8	µg/L	NA	1.0		10/10/01	TC
Toluene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	102	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	105	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	99	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	110	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-6

Lab ID: 0110272-03A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

Qualifiers: J - Analyte detected below PQL

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

MDL - Minimum Detection Limit

E - Value above quantitation range

NA - Not Applicable

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-6

Lab ID: 0110272-03A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	21.3	µg/L	NA	1.0		10/10/01	TC
Toluene	1.6	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	103	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	105	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	100	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	109	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)
 Client Sample ID: MW-7
 Project: 2001-288-10
 Site ID: RAVENSWOOD PCE

Lab Order: 0110272
 Lab ID: 0110272-04A
 Collection Date: 10/8/01
 Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	1.6	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	1.5	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	2.5	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-7

Lab ID: 0110272-04A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	19.5	µg/L	NA	1.0		10/10/01	TC
Toluene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	108	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	103	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	103	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	109	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-9

Lab ID: 0110272-06A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-9

Lab ID: 0110272-06A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-10

Lab ID: 0110272-07A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
VOLATILE ORGANIC COMPOUNDS		SW8260B					
2-Butanone	ND	µg/L	NA	10.0		10/10/01	TC
2-Hexanone	ND	µg/L	NA	10.0		10/10/01	TC
4-Methyl-2-pentanone	ND	µg/L	NA	10.0		10/10/01	TC
Acetone	ND	µg/L	NA	10.0		10/10/01	TC
Acrolein	ND	µg/L	NA	10.0		10/10/01	TC
Acrylonitrile	ND	µg/L	NA	10.0		10/10/01	TC
Carbon disulfide	ND	µg/L	NA	10.0		10/10/01	TC
Iodomethane	ND	µg/L	NA	10.0		10/10/01	TC
Vinyl acetate	ND	µg/L	NA	10.0		10/10/01	TC
Benzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Bromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromodichloromethane	ND	µg/L	NA	1.0		10/10/01	TC
Bromoform	ND	µg/L	NA	1.0		10/10/01	TC
Bromomethane	ND	µg/L	NA	1.0		10/10/01	TC
n-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
sec-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
tert-Butylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Carbon tetrachloride	ND	µg/L	NA	1.0		10/10/01	TC
Chlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Chloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Chloroform	ND	µg/L	NA	1.0		10/10/01	TC
Chloromethane	ND	µg/L	NA	1.0		10/10/01	TC
2-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
4-Chlorotoluene	ND	µg/L	NA	1.0		10/10/01	TC
Dibromochloromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromo-3-chloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dibromoethane	ND	µg/L	NA	1.0		10/10/01	TC
Dibromomethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,4-Dichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
Dichlorodifluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,2-Dichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
1,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,3-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 11-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0110272

Client Sample ID: MW-10

Lab ID: 0110272-07A

Project: 2001-288-10

Collection Date: 10/8/01

Site ID: RAVENSWOOD PCE

Matrix: LIQUID

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
2,2-Dichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,1-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
cis-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
trans-1,3-Dichloropropene	ND	µg/L	NA	1.0		10/10/01	TC
Ethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Hexachlorobutadiene	ND	µg/L	NA	1.0		10/10/01	TC
Isopropylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
4-Isopropyltoluene	ND	µg/L	NA	1.0		10/10/01	TC
Methylene chloride	ND	µg/L	NA	1.0		10/10/01	TC
Naphthalene	ND	µg/L	NA	1.0		10/10/01	TC
n-Propylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Styrene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2,2-Tetrachloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Tetrachloroethene	1.2	µg/L	NA	1.0		10/10/01	TC
Toluene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trichlorobenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,1,1-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
1,1,2-Trichloroethane	ND	µg/L	NA	1.0		10/10/01	TC
Trichloroethene	ND	µg/L	NA	1.0		10/10/01	TC
Trichlorofluoromethane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,3-Trichloropropane	ND	µg/L	NA	1.0		10/10/01	TC
1,2,4-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
1,3,5-Trimethylbenzene	ND	µg/L	NA	1.0		10/10/01	TC
Vinyl chloride	ND	µg/L	NA	1.0		10/10/01	TC
o-Xylene	ND	µg/L	NA	1.0		10/10/01	TC
m,p-Xylene	ND	µg/L	NA	2.0		10/10/01	TC
Surr: 1,2-Dichloroethane-d4	104	%REC	NA	80-120		10/10/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	86-115		10/10/01	TC
Surr: Dibromofluoromethane	101	%REC	NA	80-120		10/10/01	TC
Surr: Toluene-d8	108	%REC	NA	88-110		10/10/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

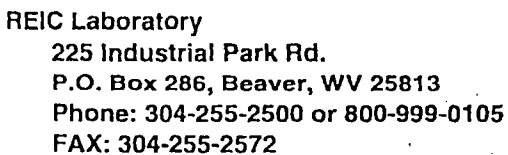
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level



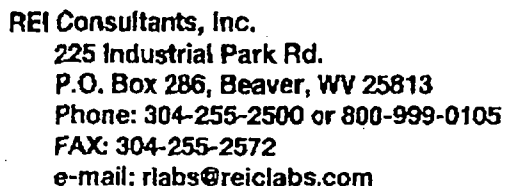
Nu.

5

CITY/STATE/ZIP: _____

SAMPLER: DUSTIN HOLMES + SCOTT HAMERICK

[illegible]



No. 10.

CLIENT: ~~WV DEP~~ GML Consultants
- ADDRESS: 3412 Chesterfield Ave.
CITY/STATE/ZIP: Charleston WV 25304
BILL TO: Bryan Aurther - WVDEP
CITY/STATE/ZIP: French Creek, WV
PURCHASE ORDER # _____
QUOTE # _____

CONTACT PERSON: Chris Butler
TELEPHONE #: 304 926 8100
FAX #: 304 926 8180
E-MAIL ADDRESS: C.butler@gaiconsultants.com
SITE ID & STATE: Ravenswood WV
PROJECT ID: 2001-288-10
SAMPLER: FSH

SAMPLE LOG AND ANALYSIS REQUEST		TURNAROUND TIME REQUIREMENTS		PRESERVATIVES		PRESERVATIVE CODES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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		*RUSH:	5-Day	3-Day	2-Day	1-Day	0 No Preservative	1 Hydrochloric Acid	2 Nitric Acid	3 Sulfuric Acid	4 Sodium Thiosulfate	5 Sodium Hydroxide	6 Zinc Acetate	7 EDTA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING	MATRIX	SAMPLE	ANALYSIS REQUESTED & METHOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098

APPENDIX D

Well Soil Analytical Results and Chain of Custody Forms

REI Consultants Inc.

Date: 12-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0109826

Client Sample ID: MW-5D

Lab ID: 0109826-01A

Project: 2001-288-10

Collection Date: 9/25/01

Site ID: RAVENSWOOD, WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE		SM2540 B					
Percent Moisture	9.0	wt%	NA	0.5		10/01/01	CJH
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Tetrachloroethene	ND	µg/Kg	NA	2		09/28/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
Trichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		09/28/01	TC
Surr: 1,2-Dichloroethane-d4	106	%REC	NA	72-120		09/28/01	TC
Surr: 4-Bromofluorobenzene	99	%REC	NA	74-121		09/28/01	TC
Surr: Toluene-d8	103	%REC	NA	81-117		09/28/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 08-Oct-01

Client: WV DEP-HANSFORD ST.

Lab Order: 0110136

Client Sample ID: MW-5D 50.0'-51.5'

Lab ID: 0110136-04A

Project: 2001-288-10

Collection Date: 9/25/01

Site ID: RAVENSWOOD PCE WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
ORGANIC CARBON, Total		LLOYD KAHN					
Total Organic Carbon	7,110	mg/Kg	NA	100		10/05/01	JC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

NATURAL DENSITY

PROJECT RAVENWOOD PCE SITE NO. 2001-288-10 TESTED BY DJN 10-2-01
 NG NO. MW-5-D SAMPLE NO. _____ CALC. BY DJN 10-3-01
 DEPTH PUSHED 50.0' - 51.5' CHECKED BY IRS 10/4/01
 TOP OF SAMPLE 14.5 INCHES FROM TOP OF TUBE
 BOT. OF SAMPLE 0.5 INCHES FROM BOTTOM OF TUBE

RECOVERY 1.25' / 1.50'

TOTAL WT. OF TUBE BEFORE CUTTING (a) 2848 GMS.
 WT. OF PORTION(S) CUT OFF (b) _____ GMS.
 WT. OF SOIL-FILLED PORTION(S) (a-b) _____ GMS.
 WT. OF TUBE OF LENGTH L (c) 1019 GMS.
 WT. OF SOIL FILLING LENGTH L (a-b-c) 1829 GMS.
 LENGTH OF SOIL-FILLED PORTION, L 10.875 IN.
 COMPOSITE WET UNIT WT. OF SOIL, γ 99.10 PCF

TUBE DIMENSIONS
2.849
 DIAMETER = 2.85 IN.
 AREA = 6.376 IN.²
6.465
 $\gamma = 0.597 \frac{(a-b-c)}{L}$
0.589

REMARKS SOIL SUBSAMPLED THROUGH CENTERED PORTION FOR TOC.

DEGREE OF SATURATION _____

SOIL PROFILE AND SAMPLING

									SUMMARY OF DATA				
DEPTH	TUBE CUTS	SOIL PROFILE	UNIT WT. SAMPLE NO.	TYPE OF TESTS RUN	CONTAINER NUMBER	CONSISTENCY	COLOR	SOIL DESCRIPTION (DESCRIBE PRIMARY AND SECONDARY SOIL TYPES E.G. SILTY CLAY, SANDY GRAVEL, ORGANIC SILT, ETC.)	U.S.C.S. SYMBOL	UNIT WEIGHT γ/γ_d	WATER CONTENT	UNCONFINED COMPRESSION	
												L.L. P.L.	POCKET PENETRO. q_u IN TSF
2.0													
								</					

INDICATE EACH CUT OF THE TUBE WITH AN ARROW
 INDICATE EACH SOIL CUT (AFTER EXTRUDING) BY A BROKEN LINE
 INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
 INDICATE WAX BY CROSS-HATCHING
 INDICATE SOIL TYPES BY STANDARD SYMBOLS

		TOP	BOTTOM
TARE NO.	4785	80	2
WT. TARE + WS (GR)	270.49	246.30	488
WT. TARE + DS (GR)	297.99	235.52	423
WT. TARE (GR)	9.47	9.57	9.4
WT. DS (GR)	238.47	225.95	414
WT. WATER (GR)	30.02	10.78	45

REI Consultants Inc.

Date: 12-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0109826

Client Sample ID: MW-7

Lab ID: 0109826-02A

Project: 2001-288-10

Collection Date: 9/19/01

Site ID: RAVENSWOOD, WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE		SM2540 B					
Percent Moisture	15	wt%	NA	0.5		10/01/01	CJH
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Tetrachloroethene	50	µg/Kg	NA	19		10/11/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
Trichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		09/28/01	TC
Surr: 1,2-Dichloroethane-d4	109	%REC	NA	72-120		09/28/01	TC
Surr: 4-Bromofluorobenzene	107	%REC	NA	74-121		09/28/01	TC
Surr: Toluene-d8	101	%REC	NA	81-117		09/28/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 08-Oct-01

Client: WV DEP-HANSFORD ST.

Lab Order: 0110136

Client Sample ID: MW-7 50.0'-51.0'

Lab ID: 0110136-03A

Project: 2001-288-10

Collection Date: 9/19/01

Site ID: RAVENSWOOD PCE WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
ORGANIC CARBON, Total		LLOYD KAHN					
Total Organic Carbon	9,910	mg/Kg	NA	100		10/05/01	JC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

NATURAL DENSITY

PROJECT RAVENSWOOD PCF SITE NO. 2001-288-10 TESTED BY DJN 10/2/01
 WELL NO. MW-7 SAMPLE NO. _____ CALC. BY DJN 10/3/01
 DEPTH PUSHED 50.0 → 51.0 CHECKED BY DRS 10/4/01
 TOP OF SAMPLE 18.0 INCHES FROM TOP OF TUBE
 BOT. OF SAMPLE 0.25 INCHES FROM BOTTOM OF TUBE RECOVERY 1.0/1.0

TOTAL WT. OF TUBE BEFORE CUTTING (a)	<u>2,264</u>	GMS.
WT. OF PORTION(S) CUT OFF (b)	<u> </u>	GMS.
WT. OF SOIL-FILLED PORTION(S) (a-b)	<u> </u>	GMS.
WT. OF TUBE OF LENGTH L (c)	<u>710</u>	GMS.
WT. OF SOIL FILLING LENGTH L (a-b-c)	<u>1554</u>	GMS.
LENGTH OF SOIL-FILLED PORTION, L	<u>8.875</u>	IN.
COMPOSITE WET UNIT WT. OF SOIL, γ	<u>102.8</u>	PCF

TUBE DIMENSIONS

$\gamma = \frac{0.597}{0.587} \frac{(a-b-c)}{L}$

REMARKS SOIL WAS SUBSAMPLED THROUGH CENTER PORTION FOR TOC

DEGREE OF SATURATION ———

SOIL PROFILE AND SAMPLING

DEPTH	TUBE CUTS	SOIL PROFILE	UNIT WT. SAMPLE NO.	TYPE OF TESTS RUN	CONTAINER NUMBER	CONSISTENCY	COLOR	SOIL DESCRIPTION (DESCRIBE PRIMARY AND SECONDARY SOIL TYPES E.G. SILTY CLAY, SANDY GRAVEL, ORGANIC SILT, ETC.)	SUMMARY OF DATA				
									U.S.C.S. SYMBOL	UNIT WEIGHT γ_u	WATER CONTENT	L.L. P.L. UNCONFINED COMPRESSION q_u IN TSF	

D. EACH CUT OF THE TUBE WITH AN ARROW
 C. EACH SOIL CUT (AFTER EXTRUDING) BY A BROKEN LINE
 B. DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
 A. DATE WAX BY CROSS-HATCHING
 1. INDICATE SOIL TYPES BY STANDARD SYMBOLS

	TOP	BOTTOM
TARE NO.	2	3 K-10
WT. TARE + WS (GR)	218.64	225.48 452.5
WT. TARE + DS (GR)	209.36	209.88 426.5
WT. TARE (GR)	10.09	10.52 1025
WT. DS (GR)	194.27	199.36 416.2
WT. WATER (GR)	4.28	15.60 25.9

REI Consultants Inc.

Date: 12-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0109826

Client Sample ID: MW-8

Lab ID: 0109826-03A

Project: 2001-288-10

Collection Date: 9/20/01

Site ID: RAVENSWOOD, WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE							
Percent Moisture	19	wt%	NA	0.5		10/01/01	CJH
VOLATILE ORGANIC COMPOUNDS							
		SM2540 B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Tetrachloroethene	ND	µg/Kg	NA	2		09/28/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
Trichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		09/28/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	72-120		09/28/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	74-121		09/28/01	TC
Surr: Toluene-d8	105	%REC	NA	81-117		09/28/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 08-Oct-01

Client: WV DEP-HANSFORD ST.

Lab Order: 0110136

Client Sample ID: MW-8 40.0'-42.0'

Lab ID: 0110136-02A

Project: 2001-288-10

Collection Date: 9/20/01

Site ID: RAVENSWOOD PCE WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
ORGANIC CARBON, Total							
Total Organic Carbon	2,990	mg/Kg	NA	100		10/05/01	JC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 12-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)
 Client Sample ID: MW-8
 Project: 2001-288-10
 Site ID: RAVENSWOOD, WV

Lab Order: 0109826
 Lab ID: 0109826-03A
 Collection Date: 9/20/01
 Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE							
Percent Moisture	19	wt%	NA	0.5		10/01/01	CJH
VOLATILE ORGANIC COMPOUNDS							
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Tetrachloroethene	ND	µg/Kg	NA	2		09/28/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
Trichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		09/28/01	TC
Surr: 1,2-Dichloroethane-d4	107	%REC	NA	72-120		09/28/01	TC
Surr: 4-Bromofluorobenzene	102	%REC	NA	74-121		09/28/01	TC
Surr: Toluene-d8	105	%REC	NA	81-117		09/28/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL
 PQL - Practical Quantitation Limit
 MDL - Minimum Detection Limit
 NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
 S - Spike Recovery outside accepted recovery limits
 E - Value above quantitation range
 * - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 12-Oct-01

Client: GAI CONSULTANTS (CHARLESTON)

Lab Order: 0109826

Client Sample ID: MW-9

Lab ID: 0109826-04A

Project: 2001-288-10

Collection Date: 9/14/01

Site ID: RAVENSWOOD, WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
PERCENT MOISTURE		SM2540 B					
Percent Moisture	18	wt%	NA	0.5		10/01/01	CJH
VOLATILE ORGANIC COMPOUNDS		SW8260B					
cis-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
trans-1,2-Dichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Tetrachloroethene	ND	µg/Kg	NA	2		09/28/01	TC
1,1,1-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
1,1,2-Trichloroethane	ND	µg/Kg	NA	2		09/28/01	TC
Trichloroethene	ND	µg/Kg	NA	2		09/28/01	TC
Vinyl chloride	ND	µg/Kg	NA	2		09/28/01	TC
Surr: 1,2-Dichloroethane-d4	108	%REC	NA	72-120		09/28/01	TC
Surr: 4-Bromofluorobenzene	100	%REC	NA	74-121		09/28/01	TC
Surr: Toluene-d8	104	%REC	NA	81-117		09/28/01	TC

Abbreviations: ND - Not Detected at the PQL or MDL

PQL - Practical Quantitation Limit

MDL - Minimum Detection Limit

NA - Not Applicable

Qualifiers: J - Analyte detected below PQL

S - Spike Recovery outside accepted recovery limits

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

REI Consultants Inc.

Date: 08-Oct-01

Client: WV DEP-HANSFORD ST.

Lab Order: 0110136

Client Sample ID: MW-9 32.0'-34.0'

Lab ID: 0110136-01A

Project: 2001-288-10

Collection Date: 9/14/01

Site ID: RAVENSWOOD PCE WV

Matrix: SOIL

Analyses	Result	Units	MDL	PQL	Qual	Date Analyzed	Analyst
ORGANIC CARBON, Total		LLOYD KAHN					
Total Organic Carbon	4,270	mg/Kg	NA	100		10/05/01	JC

Abbreviations: ND - Not Detected at the PQL or MDL
PQL - Practical Quantitation Limit
MDL - Minimum Detection Limit
NA - Not Applicable

Qualifiers: J - Analyte detected below PQL
S - Spike Recovery outside accepted recovery limits
E - Value above quantitation range
* - Value exceeds Maximum Contaminant Level

NATURAL DENSITY

PROJECT RAUENSWOOD PCE SITE NO. 2001-280-10 TESTED BY DJN 10/21/01
 ING NO. MW 9 SAMPLE NO. 32.0 → 34.0 CALD. BY DJN 10/31/01
 DEPTH PUSHED 32.0 INCHES FROM TOP OF TUBE CHECKED BY DS 10/2/01
 TOP OF SAMPLE 2.0 INCHES FROM TOP OF TUBE
 TOT. OF SAMPLE 0.5 INCHES FROM BOTTOM OF TUBE

RECOVERY 2.0/2.0

TOTAL WT. OF TUBE BEFORE CUTTING (a) 6915 GMS.
 WT. OF PORTION(S) CUT OFF (b) _____ GMS.
 WT. OF SOIL-FILLED PORTION(S) (a-b) _____ GMS.
 WT. OF TUBE OF LENGTH L (c) 1861 GMS.
 WT. OF SOIL FILLING LENGTH L (a-b-c) 5054 GMS.
 LENGTH OF SOIL-FILLED PORTION, L 23.94 IN.
 COMPOSITE WET UNIT WT. OF SOIL, γ 124.1 PCF

TUBE DIMENSIONS
 DIAMETER 2.871
 AREA 6.378 IN.²
 $\gamma = \frac{(a-b-c)}{L}$
0.588

REMARKS SOIL SUBSAMPLED THROUGH CENTER PORTION FOR TOC

EXCLUDING TOP 1.0"

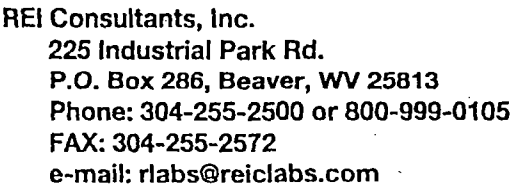
DEGREE OF SATURATION _____

SOIL PROFILE AND SAMPLING

								SUMMARY OF DATA					
DEPTH	TUBE CUTS	SOIL PROFILE	UNIT WT. SAMPLE NO.	TYPE OF TESTS RUN	CONTAINER NUMBER	CONSISTENCY	COLOR	SOIL DESCRIPTION (DESCRIBE PRIMARY AND SECONDARY SOIL TYPES E.G. SILTY CLAY, SANDY GRAVEL, ORGANIC SILT, ETC.)	U.S.C.S. SYMBOL	UNIT WEIGHT γ/γ_d	WATER CONTENT	L.L. P.L.	UNCONFINED COMPRESSION q_u IN TSF POCKET PENETRO.
32.0'			WC	V-5		Soft	BR	SANDY CLAY ORGANIC SMELL (POSSIBLE SURFACE CONTAMINATION) NOT SAMPLED FOR TOC	SC		23.8		0.25 TSF
32.5'									SC	124.1			
0'			WC	W-1		VERY SOFT	GR	CLAYEY SAND	SC - SM		24.9		
5'						Soft		SANDY CLAY	SC				
10'			WC	HR-1		Soft	GR	FATTY CLAY	MH		26.6		0.5 TSF

DIAGRAM EACH CUT OF THE TUBE WITH AN ARROW
 EACH SOIL CUT (AFTER EXTRUDING) BY A BROKEN LINE
 DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
 INDICATE WAX BY CROSS-HATCHING
 INDICATE SOIL TYPES BY STANDARD SYMBOLS

		TOP	BOTTOM
TARE NO.		V-5	W-1
WT. TARE + WS	(GR)	319.94	1339.13
WT. TARE + DS	(GR)	260.03	1074.52
WT. TARE	(GR)	8.31	11.21
WT. DS	(GR)	751.72	1063.31
WT. WATER	(GR)	59.01	264.61



NO. 106-94

CLIENT: GAT Consultants, Inc.
ADDRESS: 3412 Chesterfield Ave
CITY/STATE/ZIP: Charleston WV 25304
BILL TO: Above
CITY/STATE/ZIP: _____
PURCHASE ORDER # _____
QUOTE # _____

CONTACT PERSON: Chris Butler
TELEPHONE #: 926-8100
FAX #: 926-8180
E-MAIL ADDRESS: C.butler@jaiconsultants.com
SITE ID & STATE: Ravenswood, WV
PROJECT ID: 2001-258-10
SAMPLER: Dustin Holmes / Scott Hearnick

SAMPLE LOG AND ANALYSIS REQUEST		TURNAROUND TIME REQUIREMENTS		PRESERVATIVES		PRESERVATIVE CODES																	
		REGULAR: _____	*RUSH: _____																				
						NOTE PRESERVATIVES →																	
						0 No Preservative																	
						1 Hydrochloric Acid																	
						2 Nitric Acid																	
						3 Sulfuric Acid																	
						4 Sodium Thiosulfate																	
						5 Sodium Hydroxide																	
						6 Zinc Acetate																	
						7 EDTA																	
						ANALYSIS REQUESTED & METHOD																	
						VIA'S LIMITED SUPPLY																	

APPENDIX E

Daily Field Activity Logs and Boring Logs



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSHAW PCE

DATE: 7/10/01

PROJECT NO.: 2001-388-10

PAGE 1 OF 2

PREPARED BY: DDM

PROJECT DESCRIPTION: GEOPROBING ALONG RICE STREET FOR
SOIL & GROUNDWATER SAMPLING

WEATHER CONDITIONS: 9:00am - Cloudy 75°
2:00pm - SUNNY

PERSONNEL ON SITE:

GAI: DDM

OTHER: ENVIRONMENTAL, INC. - FRED FOX
CITY OF RAVENSHAW
DEP

EQUIPMENT IN USE:

GAI: ABC PUMPING WATER LEVEL INDICATOR, GPS, COND TEMP,
pH TESTER

CONTRACTOR: TRICKLE-CHUTE GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: BRIDGEPORT TST

DATE: 7/10/01

PROJECT NO.: 0001-008-10

PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH MET WITH THE CITY OF BRIDGEPORT
AND ENVIRONMENTAL, INC. AT 8:00 a.m.
THE CITY OF BRIDGEPORT MADE A REQUEST TO SEVERAL
WITH SEVERAL PAINT ALONG RACE STREET.
ENVIRONMENTAL SET UP ON GP-38 AT 9:00 a.m. - BEGIN
SCOUTING.
GP-38 WAS MEASURED FROM THE CORNER OF RACE
STREET & WALNUT STREET THROUGH ALLEYS STREET.
PETE OF WVDEP ARRIVED ON SITE AT 11:00 a.m.
WATER SAMPLES WERE TAKEN AT 48.0 FT. AND AT 76.0 FT.
PETE LEFT SITE AT 2:30 p.m.
DURING GP-38 WAS COMPLETED AT 4:45 p.m.
THE TOWN OF BRIDGEPORT WILL IN/IMPACTS LATER SOIL.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 7/11/01
PROJECT NO.: 2001-288-10 PAGE 1 OF 2
PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING ALONG RICE STREET FOR
GROUNDWATER SAMPLING.

WEATHER CONDITIONS: 9:00 a.m. - CLEAR 75°
2:00 p.m. - SUNNY 75°

PERSONNEL ON SITE:

GAI: DDH & SCOTT HAMRICK

OTHER: ENVIROPROBE, INC. - Roy Fox

EQUIPMENT IN USE:

GAI: GMC PICK-UP, WATER LEVEL INDICATOR, GPS
COND. TEMP. pH TESTER

CONTRACTOR: TRUCK MOUNT GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 7/11/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH & SCOTT HAMRICK ARRIVED ON SITE AT 8:20 a.m.
CONTRACTOR SET-UP ON BORING GP-40 & BEGAN DRILLING
AT 8:30 a.m.

NO SOIL SAMPLES ARE BEING TAKEN.
CONTRACTOR ENCOUNTERED WATER AT 42.2'. WATER LEVEL
WAS TAKEN USING A WATER LEVEL INDICATOR.

CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 77.5'.
WATER SAMPLES WERE TAKEN AT 42.2' AND AT 77.3'.
CONTRACTOR BACKFILLED HOLE W/ SODIUM BENTONITE &
PATCHED SURFACE W/ CONCRETE.

CONTRACTOR MOVED TO BORING GP-42 & BEGAN DRILLING
AT 1:30 p.m.

NO SOIL SAMPLES ARE BEING TAKEN.
CONTRACTOR ENCOUNTERED WATER AT 44.0'. WATER LEVEL
WAS TAKEN USING A WATER LEVEL INDICATOR.

CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 78.0'.
WATER SAMPLES WERE TAKEN AT 44.0' AND AT 78.0'.
CONTRACTOR BACKFILLED HOLE W/ SODIUM BENTONITE & PATCHED
SURFACE W/ CONCRETE.

BORING GP-42 WAS COMPLETE AT 4:00 p.m.
DDH & SCOTT HAMRICK PLACED WASTE WATER, RUBBER GLOVES
& SOIL IN 55 GAL. DRUM LOCATED AT RAVENSWOOD
MAINTENANCE BLDG.

DDH & SCOTT HAMRICK LEFT SITE AT 4:30 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 7/12/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING ALONG RACE STREET FOR
GROUNDWATER SAMPLING.

WEATHER CONDITIONS: 8:00 a.m. - CLOUDY 70°
2:30 p.m. - SUNNY 80°

PERSONNEL ON SITE:

GAI: DDH

OTHER: ENVIROPROBE, INC. - Roy Fox

EQUIPMENT IN USE:

GAI: GMC PICK-UP, WATER LEVEL INDICATOR, GPS, COND. TEMP.
pH TESTER

CONTRACTOR: TRUCK MOUNT GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 7/13/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00 a.m.

CONTRACTOR BEGAN DRILLING GP-43 AT 8:10 a.m.

CONTRACTOR ENCOUNTERED BOULDER AT 25.0 FT + DDH
MOVED GP-43 9 FT TOWARDS WALNUT STREET.

CONTRACTOR ENCOUNTERED GROUNDWATER AT 41.9'

WATER SAMPLES WERE COLLECTED AT 41.9', 9:50 a.m.

A CONFIRMATORY SAMPLE WAS ALSO COLLECTED AT 41.9' 9:50.

DDH CALIBRATED COND, pH, TEMP METER BEFORE TAKING
WATER SAMPLES.

CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 77.5'

WATER SAMPLES WERE TAKEN AT 77.5', 11:15.

A RINSATE SAMPLE WAS TAKEN AFTER PULLING RODS FROM
BORING GP-43. RINSATE SAMPLES WERE NUMBERED GP-43C.

CONTRACTOR BACKFILLED HOLE W/ SODIUM BENTONITE AND PATCHED
SURFACE W/ CONCRETE.

BORING GP-43 WAS COMPLETED AT 12:00 p.m.

CONTRACTOR MOVED TO GP-45 + BEGAN DRILLING AT 12:50 p.m.

GP-45 WAS LOCATED 104 FT. FROM GP-43 TO COMPENSATE
FOR THE 6 FT. THAT GP-43 WAS SHORT OF AND ALSO
TO AVOID A PARKED CAR.

CONTRACTOR ENCOUNTERED GROUNDWATER AT 41.4'

WATER SAMPLES WERE TAKEN AT 41.4'

CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 75.9'

WATER SAMPLES WERE TAKEN AT 75.9', 3:30 p.m.

DDH TOOK WASTE WATER TO RAVENSWOOD MAINTENANCE
BLDG + STORED IN 55 GAL. DRUM.

DDH LEFT SITE AT 4:20 p.m.

CONTRACTOR BACKFILLED BORING GP-45 W/ SODIUM BENTONITE
+ PATCHED SURFACE W/ CONCRETE.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 7/17/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING ALONG RACE STREET FOR
SOIL & GROUNDWATER SAMPLING.

WEATHER CONDITIONS: 8:00am - CLEAR 70°
2:15pm - RAIN 85°

PERSONNEL ON SITE:

GAI: DDH

OTHER: ENVIROPROBE, INC.

EQUIPMENT IN USE:

GAI: GMC PICK-UP, GPS, COND. TEMP. pH TESTER, PID

CONTRACTOR: TRUCK MOUNT GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 7/17/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00 a.m.
CONTRACTOR BEGAN TAKING SOIL SAMPLES FOR BORING GP-47
AT 8:10 a.m.
CONTRACTOR ENCOUNTERED GROUNDWATER AT 36.0'
DDH CALIBRATED COND. EMP. pH TESTER.
WATER SAMPLES WERE TAKEN AT 42.0', 1:50 p.m.
FIELD SAMPLE WAS TAKEN AT 2:10 p.m.
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 72.5'
WATER SAMPLES WERE TAKEN AT 72.5', 3:55 p.m.
ALL SOIL SAMPLES READ 0ppm ON THE PID, THEREFORE
NO SOILS WERE COLLECTED FOR LAB TESTING.
DDH TOOK WASTE WATER + SOIL TO RAVENSWOOD
MAINTENANCE BLDG. TO STORE IN 55 GAL. DRUM.
DDH LEFT SITE AT 4:30 p.m.
CONTRACTOR BACKFILLED HOLE W/ SODIUM BENTONITE + PATCHED
SURFACE W/ CONCRETE.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 7/18/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING ALONG RACE STREET FOR SOIL
& GROUNDWATER SAMPLING

WEATHER CONDITIONS:

8:00 a.m. - Cloudy 68°

3:00 p.m. - Cloudy 75°

PERSONNEL ON SITE:

GAI: DDH, CSB, FSH

OTHER: ENVIROPROBE INC. - Roy Fox
PETE COSTELLO - DEP

EQUIPMENT IN USE:

GAI: GMC PICK-UP, GPS, COND. TEMP. PH TESTER, PID

CONTRACTOR: TRUCK MOUNT GEOPROBE

SPECIAL ORDERS/FIELD CHANGES:



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 7/18/01

PROJECT NO.: 2001-288-10

PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00 a.m.
CONTRACTOR BEGAN TAKING SOIL SAMPLES ON GP-48 AT 8:10 a.m.
DDH CALIBRATED COND. TEMP. pH TESTER.
CHRIS BUTLER & SCOTT HAMRICK ARRIVED ON SITE AT 11:00 a.m.
CHRIS BUTLER LEFT SITE AT 12:30 p.m.
CONTRACTOR ENCOUNTERED GROUNDWATER AT 44.1'
WATER SAMPLES WERE TAKEN AT 44.1', 2:20 p.m.
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 80.7'
WATER SAMPLES WERE TAKEN AT 80.7', 3:45 p.m.
FIELD SAMPLE WAS TAKEN.
CONTRACTOR BACKFILLED HOLE W/ SODIUM BENTONITE & PATCHED
SURFACE W/ CONCRETE.
DDH & SCOTT HAMRICK TOOK WASTE WATER & SOIL TO
RAVENSWOOD MAINTENANCE BLDG. TO STORE IN 55 GAL. DRUM.
DDH & SCOTT HAMRICK LEFT SITE AT 4:30 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 8/14/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING IN AREAS OF RAVENSWOOD

WEATHER CONDITIONS: 8:00 a.m. - CLEAR 65°
2:30 p.m. - SUNNY 78°

PERSONNEL ON SITE:

GAI: DDH

OTHER: ENVIROPROBE

EQUIPMENT IN USE:

GAI: GMC PICK-UP TRUCK, COND. TEMP. pH METER, GPS

CONTRACTOR: GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 8/14/01

PROJECT NO.: 2001-288-10

PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00a.m.
CONTRACTOR BEGAN GEOPROBING WITH GP-50 AT 8:15a.m.
DDH CALIBRATED COND, TEMP, pH METER.
CONTRACTOR ENCOUNTERED TOP OF GROUNDWATER AT 45.0'
WATER SAMPLES WERE TAKEN AT 52.0' AT 9:35a.m.
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 81.2'
WATER SAMPLES WERE TAKEN AT 81.2' AT 11:15a.m.
CONTRACTOR PUSHED RODS DIRECTLY TO SAMPLING LOCATIONS
WITHOUT TAKING SOIL SAMPLES.
CONTRACTOR GROUTED HOLE AT 12:15.
CONTRACTOR MOVED TO AREAS OF MW-5 AND BEGAN
GEOPROBING GP-52.
ROGER FROM CITY MTN. BLDG. CLEARED UTILITIES.
CONTRACTOR ENCOUNTERED TOP OF GROUNDWATER AT 56.2'
WATER SAMPLES WERE TAKEN AT 56.2' AT 14:40.
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT
WATER SAMPLES WERE TAKEN AT
CONTRACTOR PUSHED RODS DIRECTLY TO SAMPLING LOCATIONS
WITHOUT TAKING SOIL SAMPLES.
CONTRACTOR GROUTED HOLE.
DDH DISPOSED OF WASTE SOIL + WATER IN 55 GAL. DRUM
STORED AT RAVENSWOOD MAINTENANCE BLDG.
DDH LEFT SITE AT 4:45p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE

DATE: 8/15/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING ALONG AREAS OF RAVENSWOOD.

WEATHER CONDITIONS: 8:00am - CLEAR 60°
2:30pm - SUNNY 80°

PERSONNEL ON SITE:

GAI: DDH

OTHER: ENVIROPROBE

EQUIPMENT IN USE:

GAI: GMC PICK-UP TRUCK, COND. TEMP. pH, GPS

CONTRACTOR: GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 8/15/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00 a.m.
CONTRACTOR BEGAN GEOPROBING GP-51 AT 8:15 a.m.
DDH CALIBRATED pH METER.
CONTRACTOR ENCOUNTERED TOP OF GROUNDWATER AT 57.0'
WATER SAMPLES TAKEN AT 57.0' AT 10:10.
CONFIRMATORY SAMPLE TAKEN AT 57.0'; LABELED GP-51A (57.0 FT)
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 92.2'
WATER SAMPLES TAKEN AT 92.2' AT 12:05.
CONTRACTOR PUSHED RODS DIRECTLY TO SAMPLING LOCATIONS WITHOUT
TAKING SOIL SAMPLES.
RINSE SAMPLE WAS TAKEN AFTER GP-51 (92.2 FT)
FROM RINSE WATER OFF OF SCREEN.
CONTRACTOR GROUTED GP-51 AT 12:55.
CONTRACTOR BEGAN GEOPROBING GP-53 AT 1:30 p.m.
NO SOIL SAMPLES ARE BEING TAKEN.
CONTRACTOR ADVANCED RODS TO TOP OF GROUNDWATER AT 19.0'
WATER SAMPLES TAKEN AT 19.0 AT 14:45
DUPLICATE SAMPLE TAKEN AT 19.0 LABELED GP-53A (19.0 FT)
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 65.8'
WATER SAMPLES TAKEN AT 65.8' AT 16:15
CONTRACTOR GROUTED GP-53
DDH LEFT SITE AT 4:40 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 8/16/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: GEOPROBING IN AREAS OF RAVENSWOOD

WEATHER CONDITIONS: 8:00 a.m. - CLOUDY 65°
3:00 p.m. - SUNNY 80°

PERSONNEL ON SITE:

GAI: DDH

OTHER: ENVIROPROBE, Inc.

EQUIPMENT IN USE:

GAI: GMC PICK-UP TRUCK, COND. TEMP. PH. METER, GPS

CONTRACTOR: GEOPROBE

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE DATE: 8/16/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:50 a.m.
CONTRACTOR BEGAN GEOPROBING GP-54 AT 8:00 a.m.
DDH CALIBRATED pH METER.
CONTRACTOR ENCOUNTERED TOP OF GROUNDWATER AT 22.6'
WATER SAMPLES WERE TAKEN AT 22.6' AT 9:10 a.m.
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 64.8'
WATER SAMPLES WERE TAKEN AT 64.8' AT 10:25 a.m.
DDH COLLECTED RINSE SAMPLE & LABELED RB-02.
NO SOIL SAMPLES TAKEN.
CONTRACTOR GROUTED GP-54 AT 11:00.
CONTRACTOR BEGAN GEOPROBING GP-55 AT 12:30.
ENCOUNTERED GR. WATER AT 43.0' DUPLICATE SAMPLE AT 43.0' GP-55A
WATER SAMPLES WERE TAKEN AT 43.0' AT 13:45. TAKEN
CONTRACTOR ADVANCED RODS TO TOP OF BEDROCK AT 78.1'
WATER SAMPLES WERE TAKEN AT 78.1' AT 15:20
WAS NOT ABLE TO RELEASE AIR BUBBLES FROM GP-55 (78.1F)
CONTRACTOR GROUTED GP-55.
DDH LEFT SITE AT 4:00



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/10/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL IN
RAVENSWOOD IN FRONT OF JACKSON CO. LIBRARY

WEATHER CONDITIONS: 10:00 am - Cloudy 70°
3:30 pm - Sunny 80°

PERSONNEL ON SITE:

GAI: DDH, FSH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: GMC PICK-UP TRUCK

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK W/
TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/10/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH MET H.C. NUTTING DRILLERS AT EXXON/
DAIRY QUEEN AT 10:00 a.m.
CONTRACTOR (H.C. NUTTING) BEGAN DRILLING AT SHALLOW WELL
OF MW-5 IN FRONT OF JACKSON CO. LIBRARY.
CONTRACTOR RECEIVED A TRUCK LOAD OF SUPPLIES AT 11:45
IN WHICH ROGER OF CITY MAINTENANCE GAVE PERMISSION
TO STORE ON STATE PROP. ALONG RIVER.
CONTRACTOR RESUMED DRILLING + AUGERED TO 75.0 FT.
CONTRACTOR: PLACED #5 SAND FROM 75.0 FT. UP TO 73.0 FT.
INSTALLED 73.0 FT. OF 2" PVC I.D. W/10 FT. OF
#10 SLOT SCREEN FROM 73.0 FT. UP TO 63.0 FT.
PLACED #5 SAND FROM 73.0 FT. UP TO 60.0 FT.
PLACED BENTONITE PELLETS FROM 60.0 FT. UP TO 58.0 FT.
CONTRACTOR LEFT AUGERS IN HOLE AT 58.0 FT. AND WILL POUR
CONCRETE SEAL TOMORROW 9/11/01.
DDH TOLD CONTRACTOR AUGER CUTTINGS NEED STORED IN 55 GAL
DRUMS.
DDH LEFT SITE AT 4:00 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/11/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL IN RAVENSWOOD
IN FRONT OF JACKSON C. LIBRARY

WEATHER CONDITIONS: 8:00 a.m. - CLEAR 60°
2:00 p.m. - SUNNY 80°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK W/
TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/11/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:45 a.m.

CONTRACTOR ARRIVED ON SITE AT 8:00 a.m.

CONTRACTOR BEGAN MIXING PORTLAND CEMENT + BENTONITE FOR CEMENT SEAL.

CONTRACTOR POURED CEMENT/BENTONITE MIX FROM 58.0 FT. UP TO 1.0 FT. BY INJECTING MIX THRU HOSE.

CONTRACTOR POURED SAKRETE FROM 1.0 FT. UP TO GROUND SURFACE + INSTALLED A 9" x 12" FLUSH MOUNT COVER.

MONITORING WELL WILL BE LABELED MW-5S.

CONTRACTOR PLACED AUGER CUTTINGS IN 55 GAL. DRUM + CLEANED AREA AROUND MW-5S.

CONTRACTOR TOOK AUGERS TO THE STATE PROP. ALONG RIVER TO DETOX AUGERS + WASTEWATER WAS STORED IN A 55 GAL. DRUM.

CONTRACTOR SET RIG UP ON MW-6 LOCATED ON THE BANK PROP. BUT WILL NOT BEGIN DRILLING TODAY.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/12/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL ON BANK
PROPERTY ALONG SYCAMORE ST.

WEATHER CONDITIONS: 8:00 a.m. - CLEAR 65°
2:45 p.m. - SUNNY 80°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK W/
TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/12/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:50 a.m.
CONTRACTOR ARRIVED ON SITE AT 8:00 a.m.
CONTRACTOR HAS DRILL RIG SET-UP ON MW-6 LOCATED ON
THE BANK PROP ALONG
CONTRACTOR BEGAN AUGERING ABOUT 8:15 a.m.
CONTRACTOR ENCOUNTERED AN UNMARKED UTILITY LINE
AT ABOUT 1.5 FT.
CONTRACTOR STOPPED DRILLING & DDH WENT TO MAINTENANCE
BUILDING TO HAVE ROGER (CITY MAINTENANCE SUPERVISOR) TO
IDENTIFY LINE. ROGER WAS UNABLE TO IDENTIFY LINE &
CALLED GAS CO. GAS CO. ARRIVED ON SITE ABOUT 8:55 a.m.
& STATED THAT THE LINE WAS NOT A GAS LINE.
CONTRACTOR MOVED FORWARD ABOUT 5.0 FT. & RESUMED
DRILLING.
DDH OBTAINED A SOIL SAMPLE FROM AUGER CUTTINGS AT
75.0 FT.
CONTRACTOR ENCOUNTERED TOP OF BEDROCK AT 90.0 FT.
CONTRACTOR LEFT SITE TO GET SUPPLIES STORED ON
STATE PROP.
DDH WALKED TO MAINTENANCE BUILDING, UPON RETURNING
CONTRACTOR HAD INSTALLED 2" PVC PIEZOMETER W/ ONLY
10 FT OF SCREEN LOCATED AT 86.5 FT. UP TO 76.5 FT.
20 FT. OF SCREEN WAS TO BE INSTALLED. DDH CALLED
CHRIS BUTLER WHO SAID TO DOCUMENT ERROR AND
PROCEED WITH WELL INSTALLATION.
UPON KNOCKING PLUG FROM THE BOTTOM AUGER, SAND
HEAVED ABOUT 10 FT. INTO AUGER UP TO 76.5 FT.
CONTRACTOR PLACED 2.5 FT. OF #5 SAND FROM 76.5 FT.
UP TO 74.0 FT. AND 2.0 FT. OF BENTONITE PELLETS
FROM 74.0 FT. UP TO 72.0 FT.
CONTRACTOR WILL INJECT CEMENT/BENTONITE GROUT
TOMORROW 9/13/01.
AUGERS WERE LEFT IN HOLE AT 72.0 FT.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/13/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL ON BANK
PROP. ALONG SYCAMORE ST.

WEATHER CONDITIONS: 8:00 a.m. - CLEAR 65°
3:00 p.m. - SUNNY 75°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: None

CONTRACTOR: TRUCK-MOUNT DRILL RIG, FORD PICK-UP TRUCK
W/ TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/13/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:55 a.m.

CONTRACTOR ON SITE

CONTRACTOR RESUMED WELL INSTALLATION FOR MW-6 AT 72 FT.
CONTRACTOR INJECTED CEMENT/BENTONITE GROUT MIX FROM
72.0 FT. UP TO 1.0 FT.

CONTRACTOR PLACED SAKRETE FROM 1.0 FT. UP TO GROUND
SURFACE + INSTALLED A 9" x 12" FLUSH MOUNT COVER.

CONTRACTOR PLACED AUGER CUTTINGS IN 55 GAL. DRUMS. +
TOOK AUGERS TO STATE PROP. ON RIVER TO DECON.

CONTRACTOR CREATED A POOL W/ DECON PADS + SPRAYED
AUGERS WITH A HIGH PRESSURE CLEANER. WASTE WATER
WAS PUMPED INTO 55 GAL. DRUMS.

CONTRACTOR SET-UP ON MW-9 LOCATED ON STATE PROP.
ALONG RIVER + WILL BEGIN DRILLING TOMORROW 9/14/01.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/14/01
PROJECT NO.: 2001-288-10 PAGE 1 OF 2
PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL ON STATE
PROP. LOCATED ALONG OHIO RIVER.

WEATHER CONDITIONS: 8:00 a.m. - CLEAR 55°
2:00 p.m. - CLEAR 70°

PERSONNEL ON SITE:

GAI: DDH, CHRIS BUTLER

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK W/
TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: PAVENWOOD PCE SITE DATE: 9/14/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:45 a.m.
CONTRACTOR ARRIVED ON SITE AT 8:00 a.m.
CONTRACTOR BEGAN AUGERING ON STATE PROP LOCATED ALONG
OHIO RIVER; MONITORING WELL MW-9.
CONTRACTOR PUSHED SHELBY TUBE FROM
CONTRACTOR RECEIVED A WATER READING AT 34.0' USING
WATER LEVEL INDICATOR.
CONTRACTOR AUGERED 20' MORE TO 54.0' AND SET 57'
OF CASING W/ 20' OF SCREEN + 3' OF RISER STICK-UP.
CONTRACTOR PLACED #5 SAND FROM 54.0' UP TO 31.5'
AND BENTONITE PELLETS FROM 31.5' UP TO 29.5'.
CONTRACTOR INJECTED CEMENT/BENTONITE MIX FROM 29.5'
UP TO 1.5' AND SAKRETE FROM 1.5' UP TO GROUND
SURFACE.
CONTRACTOR INSTALLED METAL PROTECTIVE COVER PIPE WITH
3' OF STICK-UP ABOVE GROUND SURFACE.
CONTRACTOR DECONTAMINATED AUGERS USING A HIGH PRESSURED
SPRAYER + DEION PADS TO COLLECT WASTE WATER. WASTE
WATER WAS PUMPED INTO 55 GAL DRUMS.
CONTRACTOR PLACED AUGER CUTTINGS IN SEPARATE 55 GAL DRUMS.
DDH LEFT SITE AT 2:30 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/17/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELL IN RAVENSWOOD
AT CORNER OF RACE STREET + SYCAMORE ST. (MW-10)

WEATHER CONDITIONS: 9:00am - CLEAR 60°
3:00pm - CLEAR 75°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK
W/ TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/18/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELLS IN
RAVENSWOOD AT CORNER OF RACE ST. + SYCAMORE ST. AND
IN ALLEY BETWEEN VIRGINIA ST. + WASHINGTON ST. (MW-7)

WEATHER CONDITIONS: 9:00am. - CLEAR 65°
3:00pm. - CLEAR 75°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK
W/ TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/18/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 9:00 a.m.
CONTRACTOR ON SITE MIXING CEMENT/BENTONITE MIX TO
GROUT MW-10.
CONTRACTOR ATTEMPTED TO INJECT GROUT MIX AT 54.0'
BUT AUGERS ARE PLUGGED W/BENTONITE.
CONTRACTOR PULLED AUGERS OUT OF HOLE & SAND CAVED
FROM 54.0' UP TO 35.0'.
CONTRACTOR INJECTED CEMENT/BENTONITE MIX THRU HOLE
FROM 35.0' UP TO 1.0'.
CONTRACTOR PLACED SAKRETE FROM 1.0' UP TO GROUND SURFACE
& INSTALLED A 9" X 12" FLUSH MOUNT COVER.
CONTRACTOR DECONTAMINATED AUGERS ON STATE PROP. LOCATED
ALONG OHIO RIVER USING A HIGH PRESSURE SPRAYER &
COLLECTING WASTE WATER ON DECON PADS & PUMPING WASTE
WATER INTO 55 GAL. DRUM.
CONTRACTOR PLACED ALGER CUTTINGS FROM MW-10 IN SEPARATE
55 GAL DRUMS.
CONTRACTOR MOVED TO MW-7 LOCATED IN ALLEY BETWEEN
VIRGINIA ST. & WASHINGTON ST. AT ABOUT 2:30 & BEGAN
ALGERING.
CONTRACTOR STOPPED DRILLING FOR THE DAY & LEFT AUGERS
IN HOLE AT 40.0'.
DDH LEFT SITE AT 3:30 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/19/01

PROJECT NO.: 2001-288-10 PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MONITORING WELLS IN RAVENSWOOD
IN ALLEY BETWEEN VIRGINIA ST. + WASHINGTON ST. (MW-7).

WEATHER CONDITIONS: 8:30 am. - CLEAR 65°
2:30 pm. - CLOUDY 75°

PERSONNEL ON SITE:

GAI: DDH



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/19/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00 a.m.

CONTRACTOR ON SITE CONTINUING TO AUGER MW-7 LOCATED
IN ALLEY BETWEEN VIRGINIA ST. + WASHINGTON ST.

CONTRACTOR PUSHED A SHELBY TUBE FROM 50.0' TO 51.0' + WAS
NOT ABLE TO PUSH TUBE ANY DEEPER. RECEIVED 1.0' RECOVERY.
DDH TOOK SOIL SAMPLE FROM AUGER CUTTINGS.

CONTRACTOR AUGERED TO 88.1' + ENCOUNTERED BEDROCK.

CONTRACTOR: INSTALLED 88.1' OF 2" PVC CASING W/ 20.0'
OF SCREEN FROM 88.1' UP TO 68.1'.

PLACED #5 SAND FROM 88.1' UP TO 65.0'

PLACED BENTONITE PELLETS FROM 65.0' UP TO 63.0'

INJECTED CEMENT/BENTONITE MIX THRU HOSE FROM
63.0' UP TO 1.5'.

POURED SAKRETE FROM 1.5' UP TO GROUND SURFACE

INSTALLED A 9" X 12" FLUSH MOUNT COVER.

CONTRACTOR PLACED AUGER CUTTINGS IN 55 GAL. DRUMS.

CONTRACTOR DECONTAMINATED AUGER ON STATE PROP. LOCATED
ALONG OHIO RIVER B.Y. USING HIGH PRESSURE SPRAYER (STEAM)
+ COLLECTING WASTE WATER ON DECON PADS + PUMPING
WASTE WATER INTO 55 GAL. DRUMS.

DDH LEFT SITE AT 3:30 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/20/01
PROJECT NO.: 2001-288-10 PAGE 2 OF 2
PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 7:45 a.m.
CONTRACTOR ARRIVED ON SITE AT 8:30 a.m.
CONTRACTOR BEGAN DRILLING OFF OF MULBERRY ST. LOCATED
BETWEEN WASHINGTON ST. & RACE ST.
CONTRACTOR IS TAKING SPLIT SPOON SAMPLES AT 5.0'
INTERVALS UNTIL BEDROCK.
CONTRACTOR PUSHED A SHELBY TUBE AT 40.0' TO 42.0'
ENCOUNTERED WATER AT 45.0'
ENCOUNTERED BEDROCK AT 80.4'.
1.0' OF NATURAL SAND HEAVED INTO AUGERS.
CONTRACTOR: INSTALLED 79.0' OF 2" PVC CASING FROM
79.0' UP TO GROUND SURFACE W/ 20.0' OF SCREEN
FROM 79.0' UP TO 59.0'.
PLACED #5 SAND FROM 79.0' UP TO 57.0'
PLACED BENTONITE PELLETS FROM 57.0' UP TO 55.0'
CONTRACTOR LEFT AUGERS IN GROUND AT 55.0' & WILL
INJECT CEMENT/BENTONITE MIX TOMORROW 9/21/01.
DDH LEFT SITE AT 3:15 p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE

DATE: 9/21/01

PROJECT NO.: 2001-288-10

PAGE 1 OF 2

PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING MON. WELL IN RAVENSWOOD OFF
OF MULBERRY ST. LOCATED BETWEEN WASHINGTON ST. AND
RACE ST.

WEATHER CONDITIONS: 9:00 a.m. - CLEAR 65°
2:00 p.m. - CLEAR 75°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP TRUCK
W/ TRAILER, HIGH PRESSURE SPRAYER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/21/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 9:00am.

CONTRACTOR BEGAN INJECTING CEMENT/BENTONITE MIX THRU
HOSE AT 55.0' IN MW-8.

CONTRACTOR INJECTED CEMENT/BENTONITE MIX FROM 55.0'
UP TO 3.0.'

CONTRACTOR POURED SAKRETE FROM 3.0' UP TO GROUND
SURFACE.

CONTRACTOR INSTALLED 9" x 12" FLUSH MOUNT COVER.

WATER LEVEL INDICATOR READ TOP OF WATER AT 44.4'

CONTRACTOR PLACED AUGER CUTTINGS IN 55 GAL. DRUMS.

CONTRACTOR DECONTAMINATED ALGERS ON STATE PROP.

LOCATED ALONG OHIO RIVER BY USING A HIGH PRESSURE
SPRAYER + COLLECTING WASTE WATER ON A DECON PAD +
PUMPING WASTE WATER INTO A SEPARATE 55 GAL. DRUM.

DDH LEFT SITE AT 2:00pm.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/24/01
PROJECT NO.: 2001-288-10 PAGE 1 OF 2
PREPARED BY: DDH

PROJECT DESCRIPTION: INSTALLING 4" MON. WELL IN RAVENSWOOD
LOCATED ALONG VIRGINIA ST. IN FRONT OF JACKSON CO.
LIBRARY.

WEATHER CONDITIONS: 8:00 a.m. - RAIN 60°
1:30 p.m. - RAIN 60°

PERSONNEL ON SITE:

GAI: DDH

OTHER: H.C. NUTTING

EQUIPMENT IN USE:

GAI: NONE

CONTRACTOR: TRUCK MOUNT DRILL RIG, FORD PICK-UP
TRUCK W/ TRAILER

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: RAVENSWOOD PCE SITE DATE: 9/24/01

PROJECT NO.: 2001-288-10 PAGE 2 OF 2

PREPARED BY: DDH

ACTIVITIES: DDH ARRIVED ON SITE AT 8:00a.m.
CONTRACTOR ARRIVED ON SITE AT 8:45a.m.
CONTRACTOR BEGAN SPLIT SPOON SAMPLING AT MW-5D
LOCATED ALONG VIRGINIA ST. IN FRONT OF JACKSON CO.
LIBRARY.
CONTRACTOR IS SAMPLING AT 5.0' INTERVALS FROM
GROUND SURFACE TO 15.0' AND THEN AT 10.0'
INTERVALS TO TOP OF BEDROCK.
CONTRACTOR SAMPLED TO 15.0' AND STOPPED DRILLING
DUE TO RAIN.
CONTRACTOR WAITED UNTIL 1:30p.m. AND RAIN DID NOT
STOP, THEREFORE CONTRACTOR STOPPED FOR THE DAY AND
WILL CONTINUE TOMORROW 9/25/01.
DDH LEFT SITE AT 1:30p.m.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: Ravenwood
PROJECT NO.: 2001-288-10
PREPARED BY: FSH

DATE: 25 Sept. 01
PAGE 1 OF 1

PROJECT DESCRIPTION: MW construction

WEATHER CONDITIONS: cool with clouds

PERSONNEL ON SITE:

GAI: FSH

OTHER: H.C. Nutting

EQUIPMENT IN USE:

GAI: Jeep Cherokee

CONTRACTOR: Truck mounted rig, Ford pick-up truck w. the trailer and a flat bed stake truck.

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: Carbon Neutral

DATE: 24 Sept 01

PROJECT NO.: 2001-26F-10

PAGE OF

PREPARED BY: FSH

ACTIVITIES: Drillers began at 08:15 FSH arrived at 08:30 for 1st split spoon sample.

HC cutting with 3 people for drilling on hand.

A split spoon was taken at 43 ft - 46.5 ft then drilled to 50 ft at 50 ft - 51.5 ft a shallow tube was taken.

Split spooned every 10 ft until bedrock at 90.5 ft.

Contractor placed 10 ft. #10 screen and 80 ft of 4" ID PVC

The fill is 12 feet with #5 silica sand. Contractor placed Benonite pellets then benonite portland cement cement. cap & finished.

FSH left site at 3:45 pm.

Returned 26 Sept 01 at 11:30 am all complete with wells except development. Obtained GPS readings for all new wells.

FSH left site at 11:30 pm.



DAILY FIELD ACTIVITY LOG

PROJECT NAME: Ravenwood PCE

DATE: 2/20/07

PROJECT NO.: 2001-288-10

PAGE 1 OF 3

PREPARED BY: FSH

PROJECT DESCRIPTION: Ravenwood PCE 5.7e sampling water and
gauging ground water elevation

WEATHER CONDITIONS: Cool windy

PERSONNEL ON SITE:

GAI: FSH

OTHER: _____

EQUIPMENT IN USE:

GAI: Depth gauge, vials

CONTRACTOR: N/A

SPECIAL ORDERS/FIELD CHANGES: _____



DAILY FIELD ACTIVITY LOG

PROJECT NAME: Revised

DATE: 26 Oct. 01

PROJECT NO.: 2001-288-10

PAGE 2 OF 3

PREPARED BY: FSH

ACTIVITIES: Arrived on site at 12:30. Sampled and gauged MW-1, MW-2, MW-3, MW-4.

Depth Gauge is marked starting to subtract 2 ft from measurement.
Gauged all wells and bridge.

Talked with Roger at City garage and discussed the soil and barrels from the installation of the monitoring wells. I informed him I would get back with him concerning the cities right to discard.

		Subtract 2 ft for	
		Meter: →	
MW-1	60.3	→	58.3 ft
MW-2	59.4	→	57.4 ft
MW-3	60.65	→	58.65 ft
MW-4	62.15	→	60.15 ft
MW-5	58.25	→	56.25 ft
MW-5D	57.9	→	55.9 ft
MW-6	55.9	→	53.9 ft
MW-7	55.3	→	53.3 ft
MW-8	46.45	→	44.45 ft
MW-9	28.6	→	26.6 ft
MW-10	47.1	→	45.1 ft
Bridge	43.9	→	41.9 ft

GROUND WATER SAMPLING FORM

Date 10/25/01

Well Sample Number MW-1

Project Name Ravenswood PCE Site Ground Water Gauging and Sampling

Project Number 2001 - 288 - 10

Engr./Geol. FSH

Time Sample Was Taken: 1:10 A.M./P.M.

Weather COOL WINDY

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)

Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)

Total well depth (TWD) _____ (ft), from top of riser

Riser length (RL) _____ (ft), above ground surface

Depth to water (DW) 58.3 (ft), from top of riser

Static water column (SWC) _____ (ft), TWD - DW

Filter pack porosity (n) _____ (Assume 0.44 for sand)

Calculation for determining the volume of water within the well casing (V_c):

Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
 _____ (ft³) $\times 7.481 =$ _____ gallons

Calculation for determining the volume of water within the borehole (V_{bh}):

Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
 _____ (ft³) $\times 7.481 =$ _____ gallons

Calculation for determining the volume of water within the filterpack (V_{fp}):

Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;

Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
 = _____ gallons

Calculation for determining the well volume:

Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume

_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP.

GROUND WATER SAMPLING FORM

Date 10/25/01Well Sample Number MW-2Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSHTime Sample Was Taken: 1:30 A.M. P.M.Weather COOL WINDYType of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)

Total well depth (TWD) _____ (ft), from top of riser

Riser length (RL) _____ (ft), above ground surface

Depth to water (DW) 57.4 (ft), from top of riser

Static water column (SWC) _____ (ft), TWD - DW

Filter pack porosity (n) _____ (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft^3);
_____ (ft^3) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft^3);
_____ (ft^3) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallons

Calculation for determining the well volume:

Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY
WITH PUMP

GROUND WATER SAMPLING FORM

Date 10/25/01Well Sample Number MW-3Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSHTime Sample Was Taken: 1:46 A.M. (P.M.)Weather Cool WindyType of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)

Total well depth (TWD) _____ (ft), from top of riser

Riser length (RL) _____ (ft), above ground surface

Depth to water (DW) 58.65 (ft), from top of riser

Static water column (SWC) _____ (ft), TWD - DW

Filter pack porosity (n) _____ (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft^3);
_____ (ft^3) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft^3);
_____ (ft^3) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP

GROUND WATER SAMPLING FORM

Date 10/25/01Well Sample Number MW-4Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSHTime Sample Was Taken: 2:00 A.M. (P.M.)Weather Cool WindyType of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)

Total well depth (TWD) _____ (ft), from top of riser

Riser length (RL) _____ (ft), above ground surface

Depth to water (DW) 60.15 (ft), from top of riser

Static water column (SWC) _____ (ft), TWD - DW

Filter pack porosity (n) _____ (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP.

GROUND WATER SAMPLING FORM

Date 10/8/01Well Sample Number MW-55Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)Total well depth (TWD) 75 (ft), from top of riserRiser length (RL) 73 (ft), above ground surfaceDepth to water (DW) 56.25 (ft), from top of riserStatic water column (SWC) 16.75 (ft), TWD - DWFilter pack porosity (n) 0.44 (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH PUMP

GROUND WATER SAMPLING FORM

Date 10/8/01

Well Sample Number MW-5D

Project Name Ravenswood PCE Site Ground Water Gauging and Sampling

Project Number 2001 - 288 - 10

Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)

Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)

Total well depth (TWD) 90.5 (ft), from top of riser

Riser length (RL) 90.5 (ft), above ground surface

Depth to water (DW) 55.9 (ft), from top of riser

Static water column (SWC) 34.6 (ft), TWD - DW

Filter pack porosity (n) 0.44 (Assume 0.44 for sand)

Calculation for determining the volume of water within the well casing (V_c):

Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
 _____ (ft³) $\times 7.481 =$ _____ gallons

Calculation for determining the volume of water within the borehole (V_{bh}):

Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
 _____ (ft³) $\times 7.481 =$ _____ gallons

Calculation for determining the volume of water within the filterpack (V_{fp}):

Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;

Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
 = _____ gallons

Calculation for determining the well volume:

Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume

_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP

GROUND WATER SAMPLING FORM

Date 10/8/01Well Sample Number MW-6Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)Total well depth (TWD) 90.0 (ft), from top of riserRiser length (RL) 86.5 (ft), above ground surfaceDepth to water (DW) 53.9 (ft), from top of riserStatic water column (SWC) 32.6 (ft), TWD - DWFilter pack porosity (n) 0.44 (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY
WITH PUMP

GROUND WATER SAMPLING FORM

Date 10/8/01Well Sample Number MW-7Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)Total well depth (TWD) 88.1 (ft), from top of riserRiser length (RL) 88.1 (ft), above ground surfaceDepth to water (DW) 53.3 (ft), from top of riserStatic water column (SWC) 34.8 (ft), TWD - DWFilter pack porosity (n) 0.44 (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY
WITH PUMP

GROUND WATER SAMPLING FORM

Date 10/8/01Well Sample Number MW-9Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 1.6 (in) $\times 1/12 =$ _____ (ft)Total well depth (TWD) 57.0 (ft), from top of riserRiser length (RL) 57.0 (ft), above ground surfaceDepth to water (DW) 26.6 (ft), from top of riserStatic water column (SWC) 30.4 (ft), TWD - DWFilter pack porosity (n) 0.44 (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallonsCalculation for determining the well volume:Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP

GROUND WATER SAMPLING FORM

Date 10/8/01Well Sample Number MW-10Project Name Ravenswood PCE Site Ground Water Gauging and SamplingProject Number 2001 - 288 - 10 Engr./Geol. FSH

Time Sample Was Taken: _____ A.M./P.M.

Weather _____

Type of Sample: GRAB COMPOSITE DEPTH INTERVAL (Circle One)

Calculations:

Well casing diameter (D_c) 2 (in) $\times 1/12 =$ _____ (ft)Borehole diameter (D_{bh}) 6 (in) $\times 1/12 =$ _____ (ft)Total well depth (TWD) 80.0 (ft), from top of riserRiser length (RL) 79.0 (ft), above ground surfaceDepth to water (DW) 15.1 (ft), from top of riserStatic water column (SWC) 33.9 (ft), TWD - DWFilter pack porosity (n) 0.44 (Assume 0.44 for sand)Calculation for determining the volume of water within the well casing (V_c):Static water column _____ (ft) $\times 0.785 (D_c^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the borehole (V_{bh}):Static water column _____ (ft) $\times 0.785 (D_{bh}^2) =$ _____ (ft³);
_____ (ft³) $\times 7.481 =$ _____ gallonsCalculation for determining the volume of water within the filterpack (V_{fp}):Volume of water within borehole (V_{bh}) _____ gallons - Volume of water within casing (V_c) _____ gallons = _____ gallons;Volume of filter pack (V_{fp}) _____ gallons $\times$ porosity (n) _____
= _____ gallons

Calculation for determining the well volume:

Volume of water within casing (V_c) _____ + Volume of water within filter pack (V_{fp}) _____ = _____ gallons; one well volume_____ gallons $\times 3$ well volumes = _____ gallons to be purged

Amount pumped 0 gallons

PID/OVA reading taken in the headspace of the well N/A

Purged Water

pH _____

Specific Conductance _____

Temperature _____

Condition of Water Before Pumping

Odor _____

Visibility _____

Other _____

Condition of Sample

pH _____

Specific Conductance _____

Temperature _____

Odor _____

Visibility _____

Other _____

Remarks DID NOT PURGE WELL DUE TO DIFFICULTY WITH
PUMP